

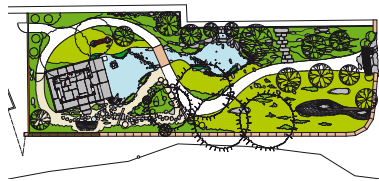
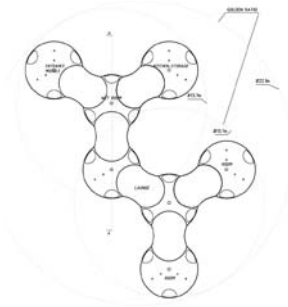


2010/11

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# Holcim awards

for sustainable construction

Holcim Awards is an international competition organized by Holcim Foundation for Sustainable Construction that recognizes innovative projects and future-oriented concepts on regional and global levels. The competition seeks projects that demonstrate an ability to stretch conventional notions about sustainable building and also balance environmental, social and economic performance. It is the mission of the Holcim Foundation to select and support initiatives that combine sustainable construction solutions with architectural excellence and enhanced quality of life beyond technical solutions. The Holcim Foundation therefore encourages sustainable responses to the technological, environmental, socioeconomic, and cultural issues affecting building and construction.

This publication represents 12 projects from Croatia that completed all conditions to participate in the 3rd cycle of Holcim Awards competition 2010/2011. Ten Croatian projects were submitted in the main category and two in the „Next Generation“ category reserved for visions of students. Three more projects were submitted where authors restricted publication rights, therefore were not included in this book.

All projects are written in English language because it is the official language of competition.

More information about all the winning projects of all cycles can be found on [www.holcimfoundation.org](http://www.holcimfoundation.org).

*Holcim Awards je međunarodno natjecanje koje organizira Holcim Foundation s ciljem nagrađivanja inovativnih projekata i koncepata koji budućnost gradnje pretvaraju u sadašnjost. Natjecanje pokazuje da se konvencionalne metode mogu mijenjati u smjeru održive gradnje i istodobno stvarati ravnotežu između prirodnih, društvenih i ekonomskih performansi. Glavna misija zaklade Holcim Foundation jest odabrati i poduprijeti projekte koji su kombinacija održive gradnje, vrhunske arhitekture i unaprjeđene kvalitete života iznad samih tehničkih rješenja. Holcim Foundation stoga ohrabruje održivu gradnju i njezine odgovore na tehnološka, prirodna, socioekonomska i kulturna pitanja koja se odnose na gradnju i konstrukciju.*

*Ova knjiga predstavlja 12 projekata iz Hrvatske koji su zadovoljili sve uvjete prijave na treći ciklus natjecanja Holcim Awards 2010/2011. U glavnoj kategoriji natjecanja Holcim Awards sudjelovalo je deset hrvatskih projekata, dok su ostala dva projekta bila u kategoriji „Next Generation“, a ona je namijenjena studentskim vizijama. Postoje još tri projekta koja su se prijavila u natjecanje, no autori su ograničili pravo objave pa stoga nisu uključena u ovu knjigu. Svi projekti su opisani na engleskom jeziku jer je to službeni jezik natjecanja.*

*Više informacija o svim pobjedničkim projektima ovoga, ali i svih prethodnih ciklusa natjecanja nalaze se na službenoj stranici [www.holcimfoundation.org](http://www.holcimfoundation.org).*

# Održiva budućnost - danas

Ovih se dana nestrpljivo iščekivao 7 milijarditi stanovnik naše male planete. Mala je sretnica postala Danica May Camacho, rođena na Filipinima. Prije samo 12 godina dobili smo 6 milijarditog stanovnika. Do kraja stoljeća očekuje se rast i do 16 milijardi stanovnika Zemlje.

Kada je ipak ne tako davne 1983 osnovana Svjetska komisija za okoliš i razvoj pri Ujedinjenim narodima (World Commission on Environment and Development - WCED) pod predsjedanjem Gro Harlem Bruntlanda, dobila zadatak "...proučiti ubrzano nazadovanje ljudskog okoliša i prirodnih resursa te ispitati posljedice po ekonomski i socijalni razvoj...", bilo je jasno da vrijeme koje je pred nama traži bitne promjene u strategiji korištenja svih resursa koji su nam na raspolaganju. Postalo je jasno da resursi nisu neograničeni. Nekoliko godina potom, komisija je predstavila završno izvješće pod nazivom „Naša zajednička budućnost“ (Brundtland Report, Our Common Future, Oxford University Press, 1987). Ovo je izvješće ponudilo i jednu od najpoznatijih, a vjerojatno i najpreciznijih definicija održivog razvoja:

“Održivi razvoj je razvoj koji zadovoljava potrebe današnjice bez kompromitiranja mogućnosti budućih generacija da zadovolje svoje potrebe.”

U izvješću je poseban naglasak stavljen na dva konceptijska uvjeta. Prvi se odnosi na elementarne i nužne potrebe siromašnih koji se moraju zadovoljiti kako bi se osigurala egzistencija i nužan razvoj zajednica. Drugi se odnosi na razumijevanje ograničenja koja pružaju tehnologija kao i sposobnost društvenih zajednica i institucija da razumiju i zadovolje sadašnje potrebe, kao i potrebe budućih generacija.

Dvadesetak godina kasnije održivost je jedna od ključnih premisa koja se nameće u svakom segmentu planiranja razvoja. Politika, znanstvena zajednica, tvrtke i pojedinci ulažu velike napore kako bi iznašli bolje i kvalitetnije metode i rješenja te se približili ukupnom cilju održivosti. Razvija se niz smjerova, čitavih pokreta često aktivno podržan i od privatnog sektora. Sve su to razlozi zbog kojih se primjećuje kvalitativan pomak u svijesti javnosti, svih sudionika procesa, pozitivan razvoj zakonskog okvira te na kraju, kada se govori o graditeljstvu, pomak u konkretnim projektiranim i realiziranim građevinama koje se približavaju ciljanim vrijednostima održivog razvoja.

Tvrtka Holcim od 2003. službeno i sustavno kroz Holcim Foundation i Holcim Awards, promiče vrijednosti održivog razvoja kroz promociju arhitektonskih projekata koji poseban naglasak stavljaju na specifične metode, materijale, tehnička i prostorna rješenja dokazujući da koncept održivosti nije ograničenje već kvalitativan izazov koji akceptira potrebe budućnosti. Postavljeni kriteriji najbolji su i dokaz i smjernice ove tvrdnje:

- inovacija i transfer - napredak
- etički standardi i socijalna jednakost - ljudi
- kvaliteta okoliša i samoodrživost - planet
- ekonomičnost i kompatibilnost - boljitak
- kontekstualni i estetski doprinos - napredna znanja i vještine

Pred vama su izabrani radovi hrvatskih arhitekata čiji su projekti ispunili zadane kriterije. Izraz je to svijesti (i savjesti) o potrebi priključenja globalnim težnjama, ali istovremeno i dokaz o stručnoj sposobnosti da se zadovolje novi kompleksni zahtjevi koje pred nas stavlja vrijeme u kojemu živimo.

Iznimno mi je drago da hrvatska arhitektonska scena, i u ovim teškim trenucima, pokazuje zavidnu razinu opstojnosti upravo na najbolji mogući način - uvođenjem novih znanja i tehnologija u svoj kreativan proces.

Zagreb, 30. listopada 2011.

Damir Ljutić, dia  
Predsjednik Društva arhitekata Zagreba

# Five “target issues” for sustainable construction

The Holcim Foundation for Sustainable Construction is committed to the “triple bottom line” concept. Based on this concept and to make sustainable construction easier to understand, evaluate and apply, the Holcim Foundation and its partner universities have identified a set of five “target issues” for sustainable construction, which serve as a basis for the evaluation of submissions in the Holcim Awards competition. This is a summary of those issues, for full definition please visit [www.holcimfoundation.org](http://www.holcimfoundation.org).

## **Innovation and transferability - “Progress”**

The project must demonstrate innovation at the forefront of sustainable construction. Breakthroughs and trend-setting approaches, irrespective of scale, must be transferable to a range of other applications. Outstanding examples of sustainable construction should not only mark significant advancement, the innovative idea should be one that can be copied again and again, thus promising the greatest benefit at a global scale. Transferable ideas are those that are affordable, simple, and broadly applicable.

## **Ethical standards and social equity - “People”**

The project must adhere to the highest ethical standards and support social equity at all stages of construction, from planning and building processes to long-term impact on the fabric of that community. The project has to provide an advanced response in terms of ethical and social responsibility. Many sustainable construction projects are developed by teams using a collective approach through which stakeholders and users are included in the design process. The process requires the highly-principled treatment of people during the design, construction, use, and recycling of buildings.

## **Environmental quality and resource efficiency - “Planet”**

The project must exhibit a sensible use and management of natural resources throughout its life cycle, including operation and maintenance. Long-term environmental concerns, whether pertaining to flows of material or energy, should be an integral part of the built structure.

## **Economic performance and compatibility - “Prosperity”**

The project must prove to be economically feasible and innovative as far as the deployment of financial resources is concerned. Funding must promote an economy of means and be compatible with the demands and constraints encountered throughout the construction’s life span. Innovative deployment of financial resources, durability, adaptability, lifecycle cost planning, ‘free’ low-tech natural resources, and other attributes can work together to make sustainable construction not only financially feasible but the preferred choice and a sound long-term investment in the future.

## **Contextual and aesthetic impact - “Proficiency”**

The project must convey a high standard of architectural quality in the way it addresses cultural and physical factors. With space and form of utmost significance, the construction must have a lasting aesthetic impact on its surrounding environment. Design quality is the aspect that clearly distinguishes sustainable construction from other forms of sustainable development. Visual expression and fitness of form are two essential qualities of all good architecture and planning, and these are also central to sustainable construction. This applies at all scales: land use planning, urban planning, and architectural design.

## Content

<b>Project code</b>	<b>Project Title / Participant Name</b>	<b>Page</b>
HA11_BNSCT	Prototype FA HOUSE / Ivica Gjuric	4
HA11_GVSDO	Japanese Garden Movement forward and peace / Zdenko Tomljanovic	8
HA11_HTIZM	Industrial block redevelopment to revive the city axis / Hrvoje Koncar	12
HA11_ITXIM	Novi Vinodolski / Zoran Zidaric	16
HA11_JKLSK	Small Capacity Plant for Production of Olive Oil / Zrinka Babic Vujic	20
HA11_KOAFQ	Interchangeable Modular Units / Vedran Mirkovic	24
HA11_KVIOH	Preliminary design of modular underwater system / Tomislav Elpeza	28
HA11_OMNCS	Visitors Center National Park Northern Velebit Krasno / Boris Cimas	32
HA11_UBAWK	City Business Complex / Alan Czeisberger	36
HA11_VMMWB	Sustainable colonization / Jakov Vidak	40
HA11_VVCRS	Reconstruction of the manor in Gornja Rijeka / Martin Jurin	44
HA11_XZTZV	Underground City XXI / Marko Sancanin	48

HA11\_BNSCT

# Prototype FA HOUSE



## General project data

### Project group 1

Building and civil engineering works  
*Competition region* Europe  
*City* Zagreb  
*Country* Croatia  
*Status of planning* Under construction  
*Formal permission* Approval/license not required  
*Construction start* Feb '10  
*Client* G&B d.o.o.  
*Intervention* New construction  
*Project background* Private commission  
*Latitude* 45°47'23.97" N  
*Longitude* 16° 7'56.89" E  
*m ASL* 105  
*Competition* no  
*Last modified* Mar 29, 2011

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*Website* www.gib.hr

## Project details

*GFA* 34 sq m  
*GV* 99 cu m  
*Construction costs* -  
*Site area* 100 sq m  
*Footprint area* 34 sq m  
*Building height* 3,40 m  
*Building depth* -

## Further relevant key figures

### Used materials

Front cladding and flat roof and floor are made of thermally treated ash tree planks. Local available natural material or FunderMax panels for exterior and interior are also possible to apply.



## Project description

A concept of foldable, mobile multipurpose and autonomous house for four persons, with minimum dimensions, has been developed using local knowledge, work and materials. Production organized in a manufacturing hall from a standard blueprint, using quality natural materials and economic use of work and materials results in a product that will be competitive in market. The provisional name of this concept is FA HOUSE foldable and autonomous house.

The FA HOUSE needs no connections to the power grid, water supply and sewerage systems.

The photovoltaic modules generate electricity which is stored in four batteries. A solar collector will be used for heating of sanitary water, and hot water will be stored in a 150 liter tank. If necessary, the sanitary water will be reheated by using a facade gas water heater supplied from a gas bottle. Gas heating unit Trumatic E 4000 is used for space heating. Rainwater collected from the flat roof, and pretreated by passing through coarse filter, is stored in a PVC tank. A booster pump, supplied with 24 V, maintains complete FA HOUSE water installation under pressure. Rainwater is additionally treated using Aquamira type five-stage treatment and is proceed into drinking water. Gray water - waste water from shower is drained into a separate 40 liter stainless steel tank which is used for toilet flushing. Waste water and feces - mud pump deposits waste and fecal water in a buried PE biological unit operating on the basis of activated sludge. A compressor adds air for waste water oxidation and accelerates purification of organic matter with aerobic microorganisms. The steel frame is made of square tube members. In serial production, it is planned to manufacture galvanized bolted steel parts. The structure can be assembled regardless of where the structural members are manufactured.

The support structure is fitted with six feet placed on the ground. The feet are of telescopic design, they could be drawn out to the height of 150 cm and, if necessary, fitted with hydraulic cylinders which makes the truck-mounted crane unnecessary. The wheeled chassis is mounted subsequently, when and if necessary. Facade cladding and flat roof are ventilated, made of thermally treated ash tree planks. The walls, ceiling and floor are filled with 100-140 mm of mineral wool.

A prototype construction has started in February 2010 and it is planned to be finished by 1 May 2011. After one-year testing period, we shall be ready to contact companies involved in the production of similar products or start our own production.

Helpdesk answer (08.03.2011.) - "It is permissible that prototypes or research has been conducted before July 1, 2010 - however any such work should be briefly cited in the "Project description" field."





## Measuring up to the target issues for sustainable construction

### Innovation and transferability - Progress



FA HOUSE - foldable and autonomous house can be produced and assembled anywhere in the world. It is intended for rural areas where infrastructure is not available. It could also be put up in a settlement of vacation houses, a hotel resort, or a car camping site. The FA HOUSE is delivered to a site by truck, its hydraulic feet are used to lift it up to 150 cm from the ground, the truck is moved and the house unloaded to the ground. In case there is a flood risk, the house is simply lifted to a required elevation.

A plan is to offer several models in the market, with possibility to choose additional equipment (photovoltaics, solar panel, biological plant, rainwater tank, furniture, flat roof terrace, wheeled chassis, awning, etc), as for a car. Possible dimensions: up to 14 m long and up to 4.5 m wide. Serial production of a FA HOUSE shall make it cheaper than a conventional house built of similar material.

### Ethical standards and social equity - People



The FA HOUSE prototype (net area 24 m<sup>2</sup> + 7,5 m<sup>2</sup>) shows how simple reorganization of furniture enables a multi-purpose use of limited space for a family of four. Guests coming for a weekend should not disturb the normal way of life, because they can be placed in a "tent" suitable for two adults and two children. The FA HOUSE without expensive autonomy, using locally available inexpensive material for cladding, becomes an affordable house.

### Environmental quality and resource efficiency - Planet



Sun, wind and rain are available and free of charge worldwide. Our prototype is an example of optimum use of renewable sources. Where infrastructure is available, savings and revenues are possible by export of surplus energy into the grid, and in case the site is not fitted with infrastructure our prototype is a cost-efficient solution.

Serial production of the FA HOUSE enables energy efficiency and economic use of building material with the lowest environmental pollution. The autonomous house generates its own power using photovoltaic modules, and uses solar collectors to heat water. Rainwater is collected from a flat roof and used as sanitary water, and drinking water is obtained by rainwater treatment using special filters. Waste water and feces are stored by waste water pump into a buried PE biological treatment unit operating on the basis of activated sludge. Waste water is treated to the degree that allows its discharge into an injection drain well.

### Economic performance and compatibility - Prosperity



Serial production is cheaper than a conventional house built. The FA HOUSE can be placed in a car camping site, so an annual plot rental charges are paid instead of purchasing a building land. A city could offer to the poor to rent such houses under favorable conditions.. In tourist regions they could be offered to the tourists and would thus pay off in a comparatively short period of time. The FA HOUSE can be removed to another site if an owner needs to move for business reasons.

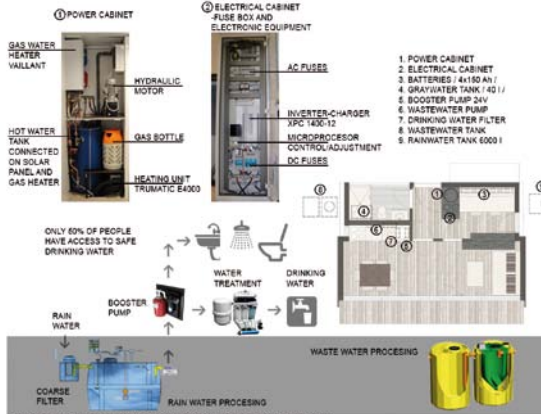
### Contextual and aesthetic impact - Proficiency



FA HOUSE is a good example of an environmentally suitable concept acceptable for the population, and some solutions used for the house could also be applied in conventional houses (rainwater collecting, solar collectors for water heating). The front side cladding will be of locally available natural material. Since the house is not high, it will integrate well with any landscape. It could also be put up in a settlement of vacation houses, a hotel resort, in to the slum or a car camping site.



SUN, WIND AND RAIN ARE AVAILABLE AND FREE OF CHARGE WORLDWIDE.



GLOBAL PROBLEM: INADEQUATE ACCESS TO POTABLE WATER

CONSTRUCTION



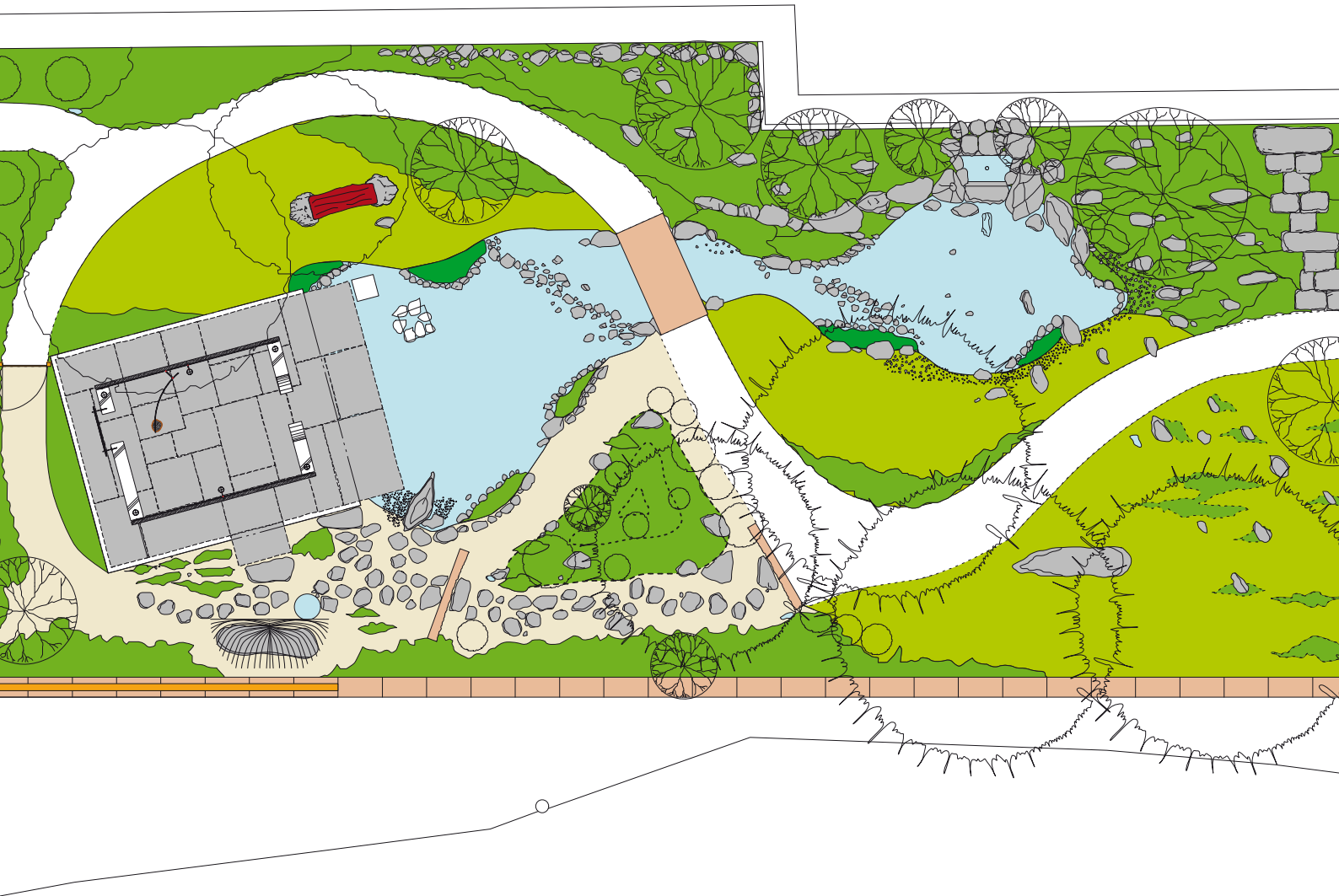
SUN, WIND AND RAINWATER ARE AVAILABLE AND FREE OF CHARGE WORLDWIDE



SUN, WIND AND RAINWATER ARE AVAILABLE AND FREE OF CHARGE WORLDWIDE

HA11\_GVSDO

# Japanese Garden Movement Forward And Peace



## General project data

### Project group 2

Landscape, urban design and infrastructure

Competition region	Europe
City	Rijeka
Country	Croatia
Status of planning	Under construction
Formal permission	Approval/license not required
Construction start	Feb '11
Client	The Primary and Ballet School Vezica, Rijeka, Croatia
Intervention	New construction and conversion
Project background	Private commission
Latitude	N 45.32
Longitude	E 14.47
m ASL	164
Competition	no
Last modified	Mar 8, 2011

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## Distribution of prize money

Main Author: 90%, Further author 1: 10%

## Project details

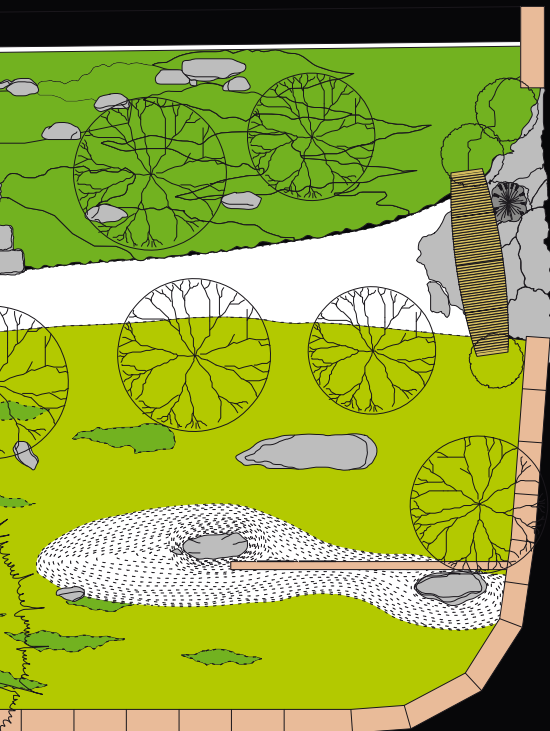
GFA	938,52 sq m
GV	-
Construction costs	110.000 USD
Site area	849,00 sq m
Footprint area	551,85 sq m
Floor Area Ratio	2:1 m
Site Occupancy Ratio	90,46% m

## Further relevant key figures

The end users of the project will be all pupils of the Primary and Ballet School Rijeka, handicapped children with difficulties in developments from different institutions and societies of the city of Rijeka and all citizens of the city of Rijeka. Garden will be open public place easily accessible by general public.

## Used materials

Soil, concrete, wood, limestone, aluminium for teahouse frame construction, plumbing and electric installation materials, plants.



## Project description

Garden, next to the Primary and Ballet School Vezica, Rijeka, Croatia, will be re build according to the concept of the Japanese garden from the historic period of Momoyama, symbolizing the message Movement Forward and Peace. Symbolism will be achieved by emphasising two principal characteristics of the gardens from that period: the presence of solid, stable stone blocks which symbolically stand for the strong and impregnable fortresses of that time, and the tea ceremony service which represents the realisation of the state of peace.

Sustainable management of this garden will emulate the natural processes that sustain the biosphere and its ecosystems and will be used as the educational tool in the teaching programs in the school, during construction and afterwards during its maintaining. Among solutions that will be used are water-wise garden techniques (xeriscaping), landscape irrigation using water from school showers and sinks, integrated Pest Management techniques for pest control, energy-efficient landscape design in the form of proper placement and selection of shade trees and creation of wind breaks, permeable paving materials to reduce storm water run-off and allow rain water to infiltrate into the ground, soil management techniques, including composting school kitchen and yard wastes and integration and adoption of renewable energy, including solar-powered landscape lighting.

One major feature of this garden will be quantification of site sustainability by establishing performance benchmarks. Environmental impact of the garden will be categorised by the achievements of the process that will include minimising negative environmental impacts and maximising positive impacts. As currently applied, the environment is usually given priority over social and economic factors but in this case educational and social impact will be integral part of the management process and quantified as such.

This garden will also create the place of social integration among handicapped children and pupils of the primary school as it will be also used as a training polygon for the practice field training of handicapped children learning the gardening skills. During those activities bought groups will interact permanently and often working together on the same tasks which will enable two-way socialization. During their day-to-day presence in this place, children will not only be exposed to the concept of culturally different, physically different and environmentally different, but will also be fully immersed into it. Growing up in such environment that emulates the highest environmental principles of nature will have in the long-run permanent effects on the adoption of the ecological, aesthetic and social values and they will in practice live the life without segregation in self sustainable environment.



**Measuring up to the target issues for sustainable construction**

**Innovation and transferability - Progress**



Garden emulates the natural processes that sustain the biosphere and its ecosystems. It pays close attention to the preservation of resources, reducing waste and preventing pollution. Compost fertilization, grass cycling, pest control measures that avoid the use of chemicals, appropriate use of turf and xeriscaping will all be its components. Its main feature will be quantification of site sustainability by establishing performance benchmarks. Environmental impact will be categorised considering factors of local climate regulation, air and water cleansing, water supply, erosion and sediment control, hazard mitigation, pollination, habitat functions, waste treatment, global climate regulation, human health and well-being benefits, cultural benefits, social benefits and educational benefits. As currently applied, the environment is usually given priority over social and economic factors but in this case they will be integral part of the management process and quantified as such.

**Ethical standards and social equity - People**



Garden we will create the place of social integration among handicapped children and pupils of the primary school. It will be the polygon for the gardening skills training of handicapped children while the primary school pupils will use it in their standard curriculum in the subjects of biology and ecology. During those activities bought groups will interact permanently and often working together on the same tasks. In this way, the gradual educational process of direct encounter with the different children will transfer to them the highest values of respect and appreciation of the different enabling two-way socialization of the greatest importance for their further development. Building it, maintaining it and living with it will become the part of children own personal development. Such life without segregation in created balance with nature will help children to develop consciousness about differences among humans as one of the great values of our civilization.

**Environmental quality and resource efficiency - Planet**



Sustainable landscaping practices used: bio-swales, xeriscaping, bio-filtering of wastes, landscape irrigation using water from showers, integrated Pest Management techniques, energy-efficient landscape design - proper placement of shade trees, permeable paving materials to reduce storm water run-off, recycling of products, soil management techniques including composting school kitchen and yard wastes, integration of renewable energy, including solar-powered lighting.

**Economic performance and compatibility - Prosperity**



Build by donation of Rotary Club and participation of local community will be used as educational tool in the school curriculum. That will be the first such a program in Croatia. As the pupils will participate actively throughout the whole process, acquired knowledge will become permanently acquired attitude towards the values of our environment. Simply said: children will learn how it is possible to create the ecological balance by their own action.

**Contextual and aesthetic impact - Proficiency**

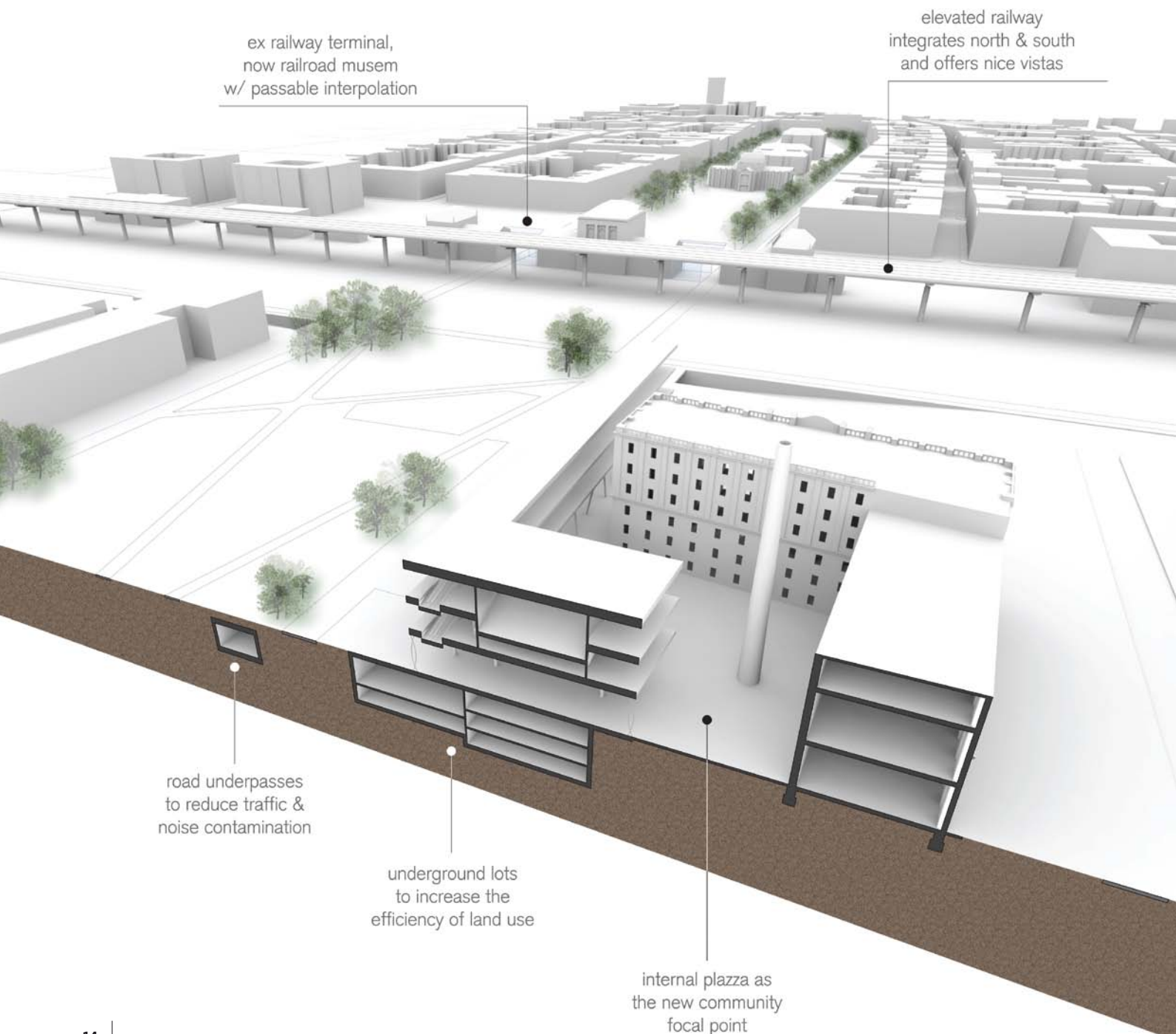


The garden designed according to the concept of the Japanese garden from the historic period of Momoyama carry out the message of wish and hope for the prosperous future and peace. Symbolism will be achieved by presence of solid stone blocks symbolizing strong fortresses of that time, and the tea ceremony site which represents the state of peace. In society still torn with the recent war and forced cultural exclusivity, such a message and practice will have immense long term benefit.



HA11\_HTIZM

# Industrial block redevelopment to revive the city axis



## General project data

### Project group 2

Landscape, urban design and infrastructure

*Competition region* Europe  
*City* Zagreb  
*Country* Croatia  
*Status of planning* Preliminary design stage  
*Formal permission* Construction start  
Not Applicable

*Client*  
*Intervention* Reconstruction/  
rehabilitation

*Project background* Research project  
*Latitude* 45°48'09.00"N  
*Longitude* 15°58'44.00"E  
*m ASL* 120  
*Competition* yes  
*Outcome* Other prize or  
acknowledgment

*Title* One of 8 student projects to be elected for  
and presented at "Zagreb Industrial Heritage"  
exhibition @ ZG City Museum in May '10  
*Last modified* Mar 30, 2011

## Main author and contact details

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dr.sc.prof. Vesna Mikic  
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The Faculty of Architecture

## Project details

*GFA* -  
*GV* -  
*Construction costs* -  
*Site area* 50000 sq m  
*Footprint area* -  
*Floor Area Ratio* -  
*Site Occupancy Ratio* -

## Further relevant key figures

### Used materials

The old: renovation -- original format of  
brick, steel and wood elements; redevelop-  
ment -- steelwork, sustainable gypsum  
elements.

The new: steel trusses, wooden frames,  
nanogel aerogel glazing system.

## Project description

The project explores both methodological and actual possibilities of town-planning and architectural engagements on an obsolete industrial site. Inside Croatia's capital city's center, using given parameters of location (ex steam-powered flour mill) and programmatic new content (cultural center of the city), the project offers a "resolution statement" that -- using architectural strategies, concepts and tools -- tells a story about the friendship between the old and new, heritage and value, obsolete and desired, and finally between the past memories and future expectations.

Given the premise that only integrated approach can guarantee quality results in the long run, the project took into consideration the city's microregion as a whole. It analyzed the context, its historical development, and discovered inconsistencies in today's urban morphology. Those were caused by the 20th century's city expansion to the south and absence of proper reaction due to its rapid nature. The finding was that the railway, its main terminal, and the neighboring rolling stock factory -- once at the city's limits -- are nowadays no longer appropriate to serve their purpose at a given location, being in a position of a main stifling agent between the old north and the new south.

This is where the issue of the city axis revival comes in as an augmented space research, and as the required *modus operandi* for the operable system of the new cultural center. Only by joining together the parts apart, only by letting people freely communicate through the city center can the neighboring cultural center sustain as it should. In that way, the imperative of free communication brings closer not only citizens and the culture. It stands also as a driving force for the entire city's new face -- a face that Zagreb yearns for a long time -- where healthier environments and new socializing places go hand in hand with economic prosperity and sustainable growth of the urban community. And still; where the urban planning engagement makes sense in the urban tissue (the fact that the southern city's expansion, some eighty years ago, followed the direct spatial logic of a northern city is not a matter of coincidence; the planners back then anticipated the restoration of the axis at some time in the future).

So the actual possibility is now given an answer. What about the questions that arise when looking at the similar instances that sprawl across the city? Or, for that matter, across the region, the continent? Is there a common language between all of them? This project shows that believing in common values can produce a methodology of approaches and managements -- which are applicable in the future projects when dealing with similar instances -- and therefore result in beneficial outcome in vast aspects of human social, economic, and cultural life -- continent-scale.

## Industrial block redevelopment to revive the city axis



## Measuring up to the target issues for sustainable construction

### Innovation and transferability - Progress



Industrial heritage is a tangible evidence on the society modernization process. It needs to be seen as a part of cultural heritage inherited from the past, whose well-thought management preserves the memory on the development and progress of human civilization, and creates new value for future generations.

Paromlin ex industrial complex is a part of common European identity (Europe: the “cradle” of industry). This project shows the benefits of preservation through redevelopment, for only by having an active role in the community can it truly be a living organism once again.

Redeveloped into an important and lively component of the city, it serves as an exemplary paradigm on how to act when in similar challenge. It shows how the future projects dealing with similar valuable instances can be:

1. approached (using the logical strategies applied), and
2. managed (using the programmatic agenda applied) to accomplish a high-quality reuse that meets the needs of a contemporary society.

### Ethical standards and social equity - People



The axis revival makes it faster and more pleasant for people to communicate on foot across the northern and southern city, compared to motorized traffic. New green areas are intentionally designed in a way to absorb the people inside. Besides apparent physical, psychological and emotional benefits from spending more time in natural environments, the citizens also get the chance to contribute to the interpretation of the whole new urban scene -- groups create certain visual fields which play an important role in balancing global and local identity of public space -- the manifestation of which bonds individuals together and makes them feel part of the whole. Cultural center's program is developed by conceiving the cultural production and the art development in three aspects. “Learning about, producing and exhibiting cultural values” is the core of center's agenda, and as such stands as a public facility that offers free access to every citizen longing for complete cultural satisfaction.

### Environmental quality and resource efficiency - Planet



Air and noise pollution: elevated railway, more walkers and bikers and less motorized traffic, underground roads and carefully planned urban micro-forests guarantee significantly lower amounts of air pollutants and noise levels in the area.

Cooling and heating: urban micro forests are shading harsh western sunrays, urban morphology of the pair incorporating the cultural center is designed with thermal performance on mind, internal facades and plaza protected against local winter winds.

### Economic performance and compatibility - Prosperity



City context: higher pedestrian flow, denser activities and cultural center's programs promote city branding that directly increases both city's own and tourism income.

Enterprises context: axis revival operations and the complex development is planned through the public-private partnership, to boost the local economy while maintaining the control of project's quality inside the frame of public sector.

Citizens context: the engagements generate both middle-term and long-term employment.

### Contextual and aesthetic impact - Proficiency



Zeitgeist preservation: keeping the identity and urban spatial qualities of the protected structure, structurally renovating its exterior, while redeveloping its interior -- being respectful to original materials and spatial relations -- to accommodate the new use.

Healing the neighborhood: symbolically through rejoining the parts and restoring the axis, as a connecting tissue agent; literally through establishing the new “lungs of the city” in the form of city center's new green areas.



## Evolution of Zagreb THE 20TH CENTURY'S BOOM

### 1 Medieval city

• Historical development started in a composition of the **main city axis** - upper town's **Brdo** which was inhabited by working people, and **Capuchin** which hosted several companies of catholic and Archdiocese's residences

• The **bordering line** between the two is manifested into the **main city axis** with the expansion to the south during later centuries

### 2 The railway ticks in

• The expansion begins with the **introduction of railway**

• **Lanzini's green harbor** plan is realized, emphasizing the city's axis, the **main railway station** is built at its southern end with the corresponding **classification yard**

• **one of the first industrial** to emerge was that of **Papucinski**, a town just south of the station across the railway

### 3 Industrial boom

• The city **expands** in every direction, in the case of **Stjepanac** expansion north, along the railway to the west and east, and reaches **Sava river** to the south

• **a couple of acres** **new industrial sites** emerge, the majority of which is to the west

• The development of **post WWII** Zagreb in the future it has seen for it has taken the role of the employment backbone of the region

## The Project GREATER SITE PLAN

### 1 Existing

### 2 Project

## a Broken Axis THE CITY TODAY

### Existing situation

### Conceptual perspective sketch

- The river has been **overpassed**, New Zagreb developed across it, and the **central bridge** continues along the axis
- The **new green areas** across the river continue the logic of the south to have a **green edge**, one of Zagreb's most recognizable urban features
- The **railway and (new) stadium** **Papucinski** factory, having found themselves in the core of a rapidly expanding city, are placed in a **wide setting** again in communication between north and south

## The Project CULTURAL CENTRE CONTEXT

### Existing situation

### Conceptual perspective sketch

### Cultural center's program

Category	Program
perform	theater
	concert
	cinema
	ball
visual	architecture
	sculpture / personal objects
	photography
	printing / graphic design
social	workshops
	lectures
	exhibitions
	performances

## Problem Map THE URBAN MORPHOLOGY

### 1 Riverfront's blocks

• The **river** along the Sava river is an obstacle for a **2000** residential units of development

• **Block** area north of the main city axis is an obstacle for a **2000** residential units of development

• **Block** area south of the main city axis is an obstacle for a **2000** residential units of development

• **Block** area east of the main city axis is an obstacle for a **2000** residential units of development

### 2 The industry

• The **area** of **factory** development is an obstacle for a **2000** residential units of development

• The **area** of **factory** development is an obstacle for a **2000** residential units of development

### 3 Green areas

• The **area** of **green** areas is an obstacle for a **2000** residential units of development

• The **area** of **green** areas is an obstacle for a **2000** residential units of development

## The Project ENERGY CONCEPT

### Local wind flow

### Renewable energy strategy

### Water contamination reduction

## Strategies, Concepts, and Tools TOWARD THE SUSTAINABLE OUTCOME

### 1 Approach 1 - neighborhood-scale strategy

1.1. **Approach 1 - neighborhood-scale strategy**

1.2. **Approach 1 - neighborhood-scale strategy**

### 2 Approach 2 - site-scale strategy

2.1. **Approach 2 - site-scale strategy**

2.2. **Approach 2 - site-scale strategy**

### 3 Approach 3 - building-scale strategy

3.1. **Approach 3 - building-scale strategy**

3.2. **Approach 3 - building-scale strategy**

### Existing

### Project

### Without park design, underpasses & forest

### With park design, underpasses & forest

### Factor routes for pedestrians & cyclists

### More income from more people shopping & dining

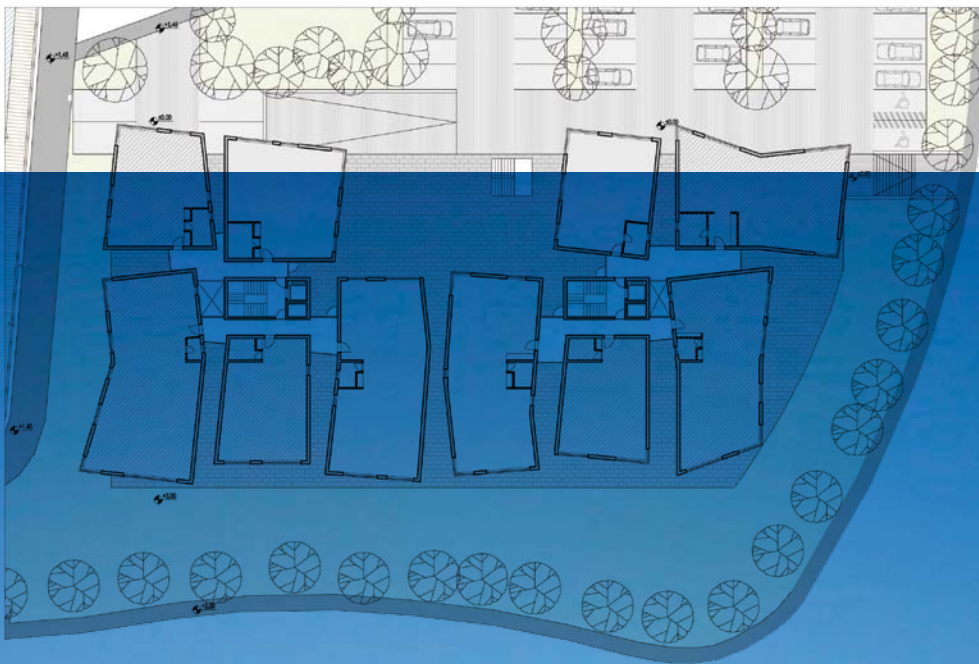
## The Project LONGITUDINAL SECTION

### The new longitudinal section of Zagreb

down town      the new culture      not urbanised

HA11\_ITXIM

# Novi Vinodolski



## General project data

### Project group 1

Building and civil engineering works	
Competition region	Europe
City	Novi Vinodolski
Country	Croatia
Status of planning	Contract awarded
Formal permission	Application in preparation
Construction start	Sep '12
Client	Presoflex-gradnja
Intervention	New construction
Project background	Private investment
Latitude	45 07
Longitude	14 47
m ASL	1,45
Competition	no
Last modified	Mar 29, 2011

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### Distribution of prize money

Main Author: 50%, Further author 1: 50%, Further author 2: 0%

## Project details

GFA	9449 sq m
GV	39250 cu m
Construction costs	-
Site area	6380 sq m
Footprint area	2180 sq m
Building height	17,20 m
Building depth	-

### Further relevant key figures

#### Materials used

Stone (traditional element)  
Smooth white ETICS facade  
Glass walls with aluminium frames

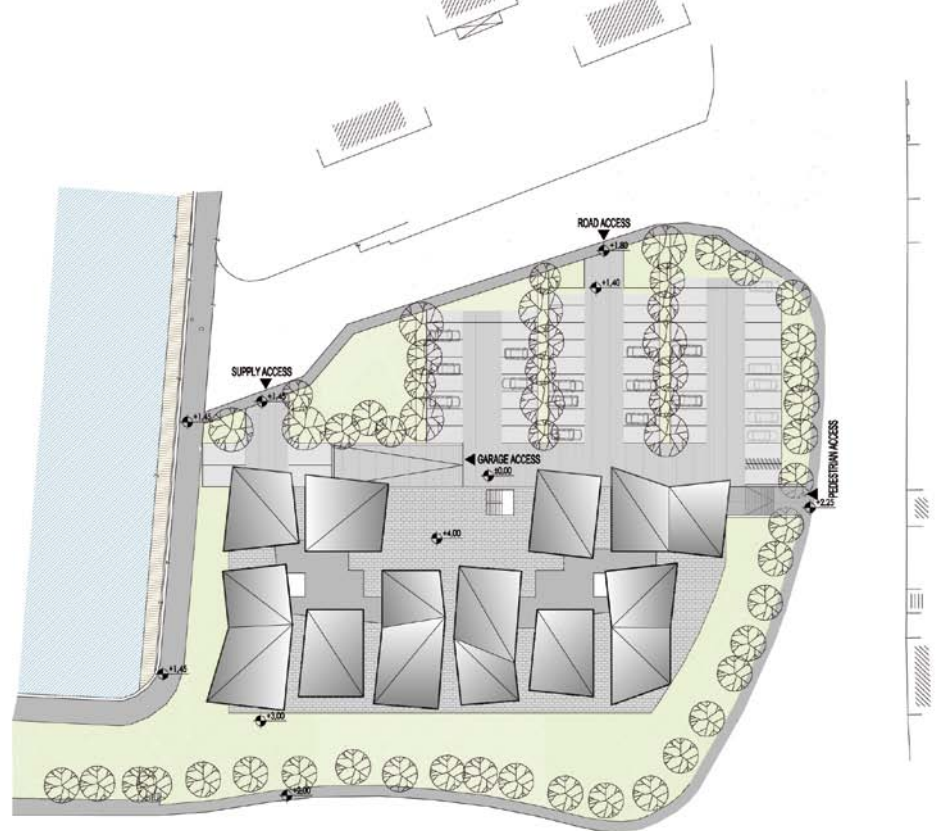
## Project description

Novi Vinodolski is a project of mixed use settlement combining living and additional contents such as commercial, restaurants, cafes and business. Object is divided into two volumes to adjust to the surrounding scale.

Additional contents are placed in a base structure, in a kind of foundation of the whole object. Added volumes appear very soft comparing to the base object and a perfect stage for maintaining mediterranean way of life. Also plan disposition allows all indoor spaces to be naturally ventilated.

Pitched roofs, as a result of urban regulations (libility pitched roof), gives a project poetic appearance reminding of seagulls in a marina which is a kind of a reflection of a spirit of a local context.





## Measuring up to the target issues for sustainable construction

### Innovation and transferability - Progress



By combining base structure with upper smaller ones we wanted to humanize the area and adopt it to human scale according to contextual conditions. Even though the investor is private, we wanted to emphasize urban space and make it as more public as it can (should) be.

### Ethical standards and social equity - People



Even though the investor is private, we wanted to emphasize urban space and make it as more public as it can (should) be. It is not often among private investors in Croatia so we can say that this this project is huge success in that field.

On top of a commercial facilities new urban plaza is created. In a scale of a city it is a micro-urbanism, but very important for local society, inhabitants of a building. Public outdoor life, so characteristic for the whole of the Mediterranean, is easily performed. We didn't want to build another concrete building with as many bedrooms as possible, we wanted to make it alive. To bring in life. And that's what architecture is about: people.

### Environmental quality and resource efficiency - Planet



All living units are designed to enjoy the best orientation according to sun, parts of day, and seasons trying to achieve the best interdependencies of living unit and environmental conditions. Except sun and view units enjoy natural ventilation throughout the day. Building is designed according to highest low-energy and self sustainable standards. Special emphasis is given to the use of solar energy.

### Economic performance and compatibility - Prosperity

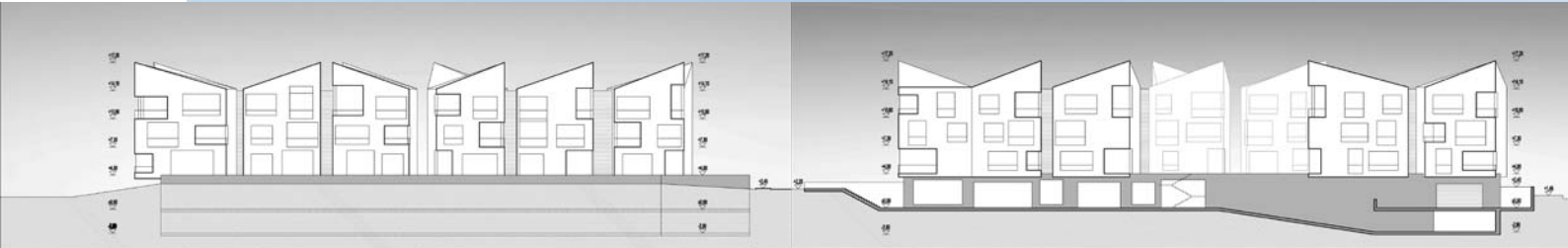


Highly sensitive economic performance is achieved through selection of the most appropriate materials. Also, choice of materials is not crucial for our architectural design. In other words, financial budget is not crucial for realization of our project. It is not based on materials, not on high technology but on very simple (we can say traditional), common materials which can be easily performed in Croatia.

### Contextual and aesthetic impact - Proficiency



While designing the project special attention was given to the scale of a city itself. We didn't want to impact the surrounding: buildings and landscape with an iconic, landmark building. This is why we placed commerce in a base of a building, mostly under the ground level and living spaces divided into several cubes on it. This is how we tried to soften this hybrid program appearance (in this context almost megastructure program). Except being used for commercial services the base creates a new public space above the ground level giving the building a public character according to Mediterranean way of life.



HA11\_JKLSK

# Small Capacity Plant for Production of Olive Oil



## General project data

### Project group 1

Building and civil engineering works	
Competition region	Europe
City	Sestanovac
Country	Croatia
Status of planning	Final design stage
Formal permission	Approved
Construction start	Sep '11
Client	Jurin dvor
Intervention	New construction
Project background	Private investment
Latitude	43,45
Longitude	16,91
m ASL	320
Competition	no
Last modified	Mar 23, 2011

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*Distribution of prize money*  
Main Author: 50%, Further author 1: 50%, Further author 2: %

## Project details

GFA	598,10 sq m
GV	1967,69 cu m
Construction costs	535.000,00 USD
Site area	65 249 sq m
Footprint area	449,60 sq m
Building height	5,88 m
Building depth	-

### Further relevant key figures

#### Materials used

structure: concrete skeleton construction;  
partitions: brick walls and plasterboards;  
cladding: stoneblocks and stone slates, wood laths;  
joinery: combination of aluminium and timber

## Project description

The project of a Small-capacity Plant for production of olive oil and preserved olives is located in the zone of Mediterranean hinterland where the olive cultivation is increased in recent years, since the coastal areas are becoming of a dominant touristic orientation, thus pushing out agricultural activities.

The aim was to propose a model of a sustainable family estate that unites cultivation, processing and a production of final goods in an environmentally friendly way. Such an approach could offer a possible solution of the actual problem of strong migrations from countryside to cities leading to impoverishment of the villages on the one side and unemployment on the other side.

The site is suitable for the activity since it is located in the center of the raw material zone (olive grove) and has good traffic connections. The production is organized rationally by combining the olive oil production with preserved olives production when the olive oil processing season is over. The Plant provides processing of 300 t of olives, and production of 45.000 l of olive oil and 5 t of preserved olives per year.

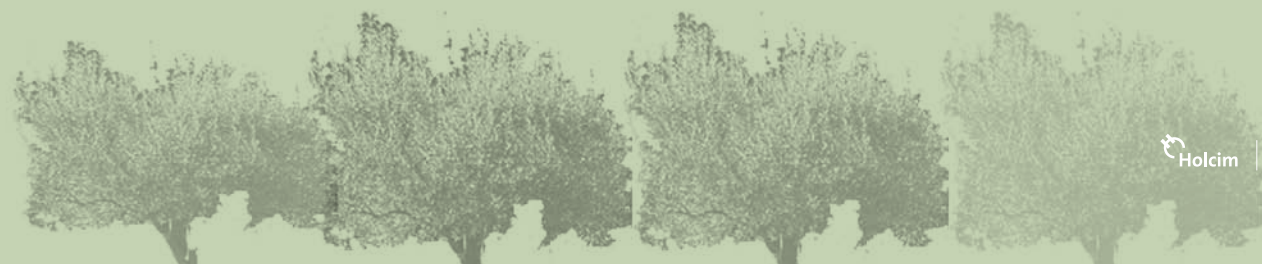
The construction of the Plant fits into the sustainable concept of the project. The building integrates local materials and construction techniques (use of the stone from the location, all used materials are produced within the radius of approx. 200 km thus minimizing transport needs), as well as the principles of passive solar architecture (orientation of spaces, wind and sun protection, use of natural ventilation, and of open porches, appropriate to the local climate conditions).

Renewable energy sources are also being used, energy for central heating, water heating and ventilation is provided from the solar energy and the exhausted olive-cake biomass pellet use, made from the production olive-cake waste (around 150 t of olive-cake waste per year with energy potential of 14,000 kJ/kg). Another part of the olive-cake waste (around 75 t) is disposed for composting and final use in the olive grove, in accordance with organic, ecological cultivation of olive trees.

Water supply includes collecting of the rainwater and use of the natural sources, drinking water well placed on the north of the location.

Wastewaters are treated before released to the absorbing well, and the vegetative waste waters, rich with organic compounds, are returned to the olive grove through the system of irrigation.

In this way the project achieves relatively high level of energy and infrastructural autonomy, and with well planned waste management it tends to have the lowest possible impact on the environment.



HA11\_JKLSK

Small Capacity Plant for Production of Olive Oil



### Measuring up to the target issues for sustainable construction

#### Innovation and transferability - Progress

★★★★

The project is setting up an example of sustainable family estate which integrates organic cultivation and processing of olives. By the use of simple and affordable technical solutions the environmental impact of the processing plant is reduced to minimum allowing it to become a model for this kind of production in the region.

#### Ethical standards and social equity - People

★★★★

The project proposes the way of revitalisation of rural areas in an underdeveloped region by promoting ecological agriculture and sustainable solutions for both construction and production. Placing of such a production plant in the middle of the agricultural land aims to improve rural living conditions and, at the end, to decrease migrations from the villages.

#### Environmental quality and resource efficiency - Planet

★★★★

The whole project is conceived in a spirit of rational use of natural resources through all phases both of the construction and of the final production, aiming to reconcile olive oil production with natural environment, as it has been from the ancient times. Therefore, the technology of processing is analyzed to bring out solutions, as water treatment or the waste management, which would reduce the environmental impact of the plant.

#### Economic performance and compatibility - Prosperity

★★★★

The project is partly financed by the government funds for agriculture and partly as a private investment. Counting a profit from selling products (olive oil and preserved olives) and from service of processing olives for other growers, to be around 226.000 dollars/ per year, the investment will be worthwhile in approximately 2, 5 years.

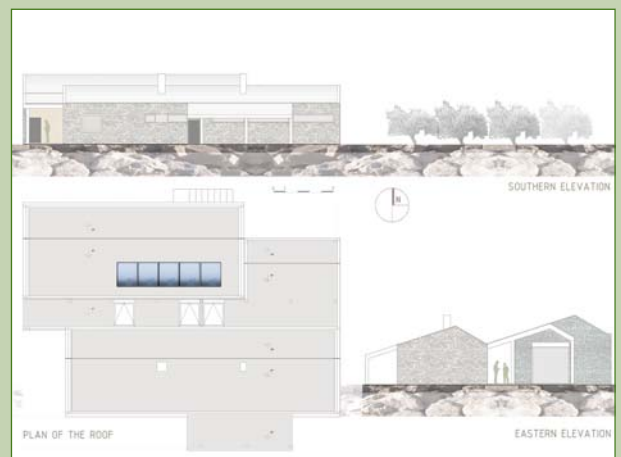
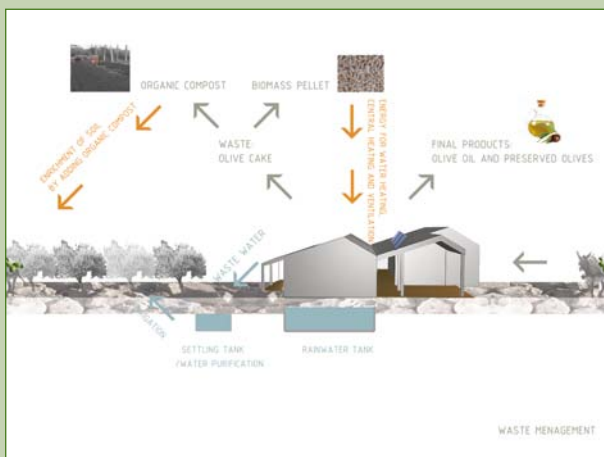
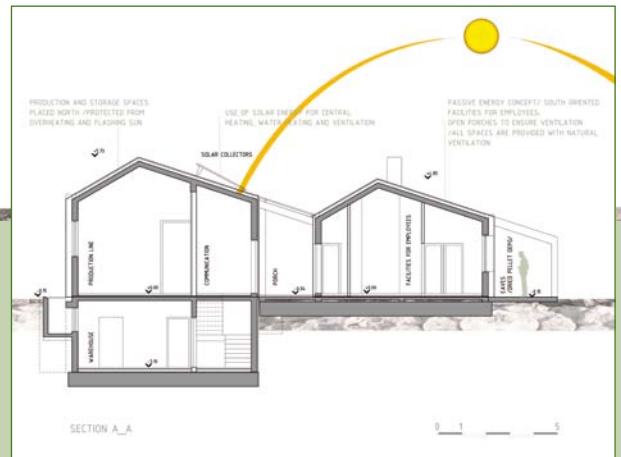
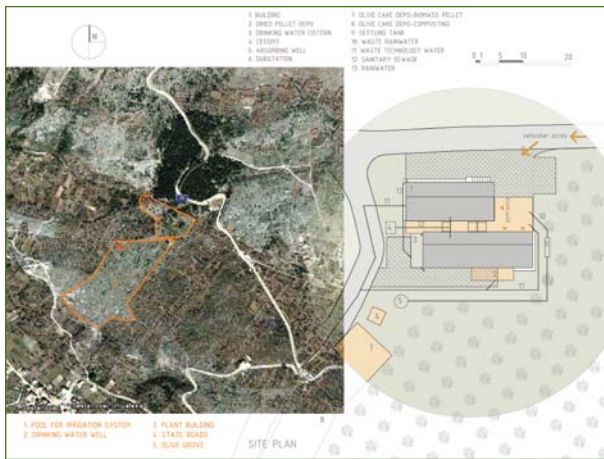
#### Contextual and aesthetic impact - Proficiency

★★★★

The project, with its scale, material and design, fits into the natural environment. The building is interpreting the traditional Dalmatian stone house, avoiding to be marked as a production site it leaves space for future changes of function or use (for example tourism or gastronomy).

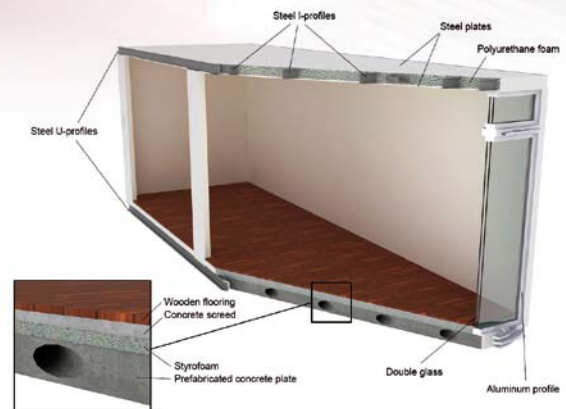
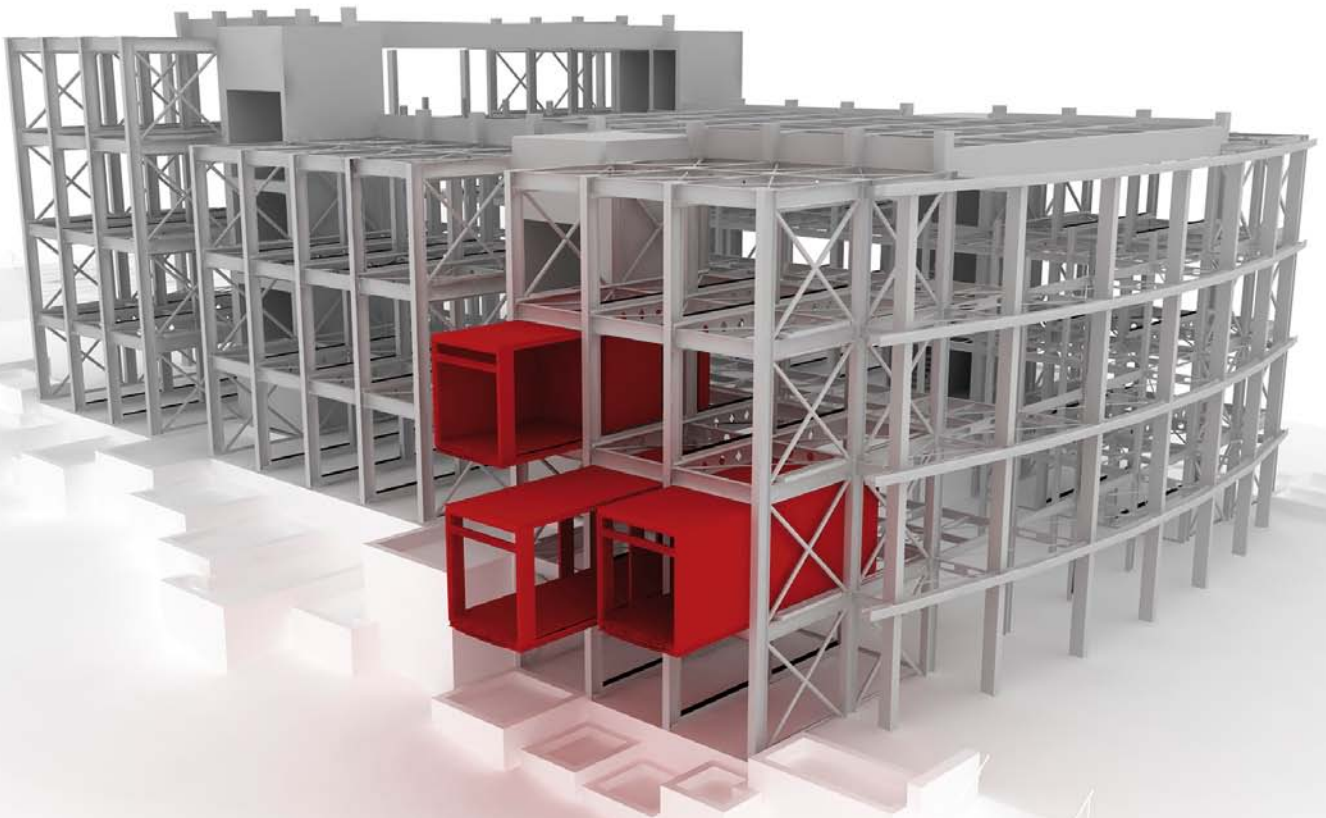






HA11\_KOAFQ

# Interchangeable Modular Units



## General project data

### Project group 1

Building and civil engineering works	
Competition region	Europe
City	Rijeka
Country	Croatia
Status of planning	Concept
Formal permission	--Other--
Construction start	Not Applicable
Client	-
Intervention	New construction
Project background	Private investment
Latitude	45° 21'
Longitude	14° 26'
m ASL	30
Competition	no
Last modified	Mar 23, 2011

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## Distribution of prize money

Main Author: 50%, Further author 1: 50%

## Project details

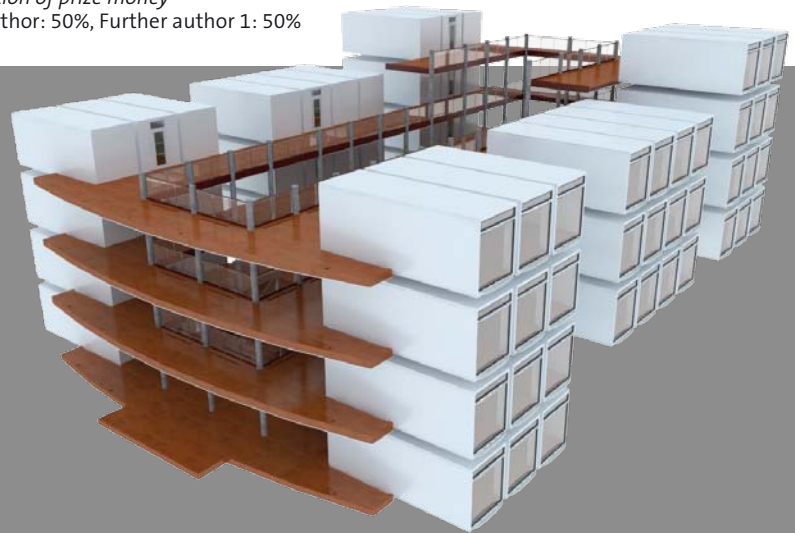
GFA	2625 sq m
GV	9736 cu m
Construction costs	5,000.000 USD
Site area	7768 sq m
Footprint area	806,25 sq m
Building height	21,1 m
Building depth	43,3 m

## Further relevant key figures

Modular construction, Energy efficiency design

## Used materials

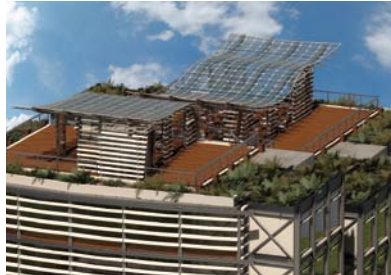
Steel elements and other steel products are most used materials because of their good properties and eligibility for prefabricated constructions. Other used materials are wood, glass and aluminum.



## Project description

We present a 5-story office building situated in a terrain slope with its elongated shape and north-south alignment. The object is a unique complex made of 72 prefabricated modular units that create 22 office units, together with its roof construction where cafeteria and restaurant are situated. Floor plan is divided into three main parts where modular units together with its steel construction are allocated symmetrical thus making a huge hallway in between which is enclosed by two glass facades. There are also 4 reinforced concrete cores made to increase a total building's stiffness and where stairways are situated. Modular units are positioned in a steel bearing construction by 4 rails thus making a complete spaces which can be arranged inside individually. Modular units are completely produced in factory and transported to the site where auto cranes or tower cranes, depend on height, can be used to erect them. In the hallway a pathway is also constructed with two elevators to make all parts of building well-connected. The tall north and south facades let in plenty of sunlight and ventilation system consisting of small windows openings provides cross ventilation and coolness throughout the building. Heat pumps provide hot water and space heating of the hallway and offices which is very sustainable, but transparent design of the building virtually obviate the need for artificial heating. On facades are installed controllable louvers to provide shade and maximize the use of natural daylight. Their transparent design reflects the green of the surrounding vegetation and the blue of the sky making the house blend in with nature. The roof garden emphasize the environmentally friendly design. It spreads along the whole roof construction made of long glued-laminated girders and connects with vegetation on the top of the steel constructions what makes relaxing and pleasant stay and enables 360-degrees view. The aluminum roof construction on the top of the building is composed of two objects, in one of which is cafeteria situated and in another restaurant. Those two objects are on different levels so they are connected by stairs. As a cover of those two objects curved glass panels are used in which are photovoltaic cells integrated. This provides the lighting of hallway and also roof objects. To unite a building with the surrounding nature, there are also concrete holders around where vegetation is planted what adds further beauty to the same building. This type of building can easily be integrated in urban areas and also countryside.

Interchangeable Modular Units



**Measuring up to the target issues for sustainable construction**

**Innovation and transferability - Progress**



This project is inspired with ISBU construction where shipping containers are used as modular units and where possibilities are endless. In our project modular units are completely prefabricated with all installation built in and all layers of floor construction set. The units are produced in factories where conditions are controllable so on that way the stages of construction are accelerated and also can be produced in large quantities.

They are completely transferable to sites and can be integrated in different types of buildings, regardless the height of the building or it's function. In the same way, the building process on the site is also shortened. The structural design of the units is simplified and can include different materials depending on the surrounding area and it's cultural heritage. This type of construction should prefer all people included in project because it's short-termed, simple, esthetically attractive and compatible with all types of structures.

**Ethical standards and social equity - People**



This type of construction is appropriate for:

- countries where exists a high demand and interest for new apartments and offices, especially in countries with high-growing population - because of its low price, it is also appropriate for areas hit by environmental disasters and where many people lost their homes so it could be a part of interest of governmental authorities -for temporary homes and offices in particular period of usage

**Environmental quality and resource efficiency - Planet**



Facts that prove this construction is environmentally friendly:

- the use of passive and active solar energy
- green roof which produces oxygen and reduces air pollution and surrounding's temperature
- treatment of rain and gray water for watering plants
- photovoltaic system integrated in roof's canopies which produces the lighting of common areas within the building
- modular units are interchangeable and also recyclable
- the use of heat pump which provides hot water and space heating
- the use of materials inside the building with excellent heat-retention properties that contribute to the structure's energy efficiency
- the possibility of automation of construction works where the conditions are controllable and the possibility of exploiting the construction waste

**Economic performance and compatibility - Prosperity**



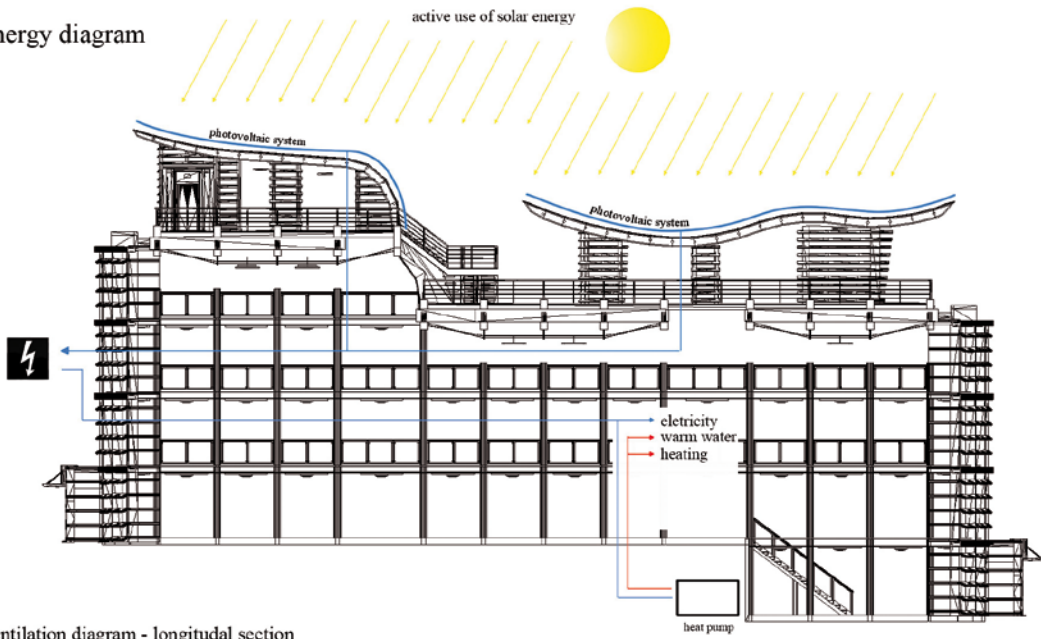
This type of construction also draws many economic facilities and the possibility of lowering the real estate's high prices and independence of economic conditions on the market. The leasing would be the best model by which a client could obtain an office from the producer with the possibility of interchanging a modular units after some time of usage and deterioration. Environmentally friendly building enables low costs of living.

**Contextual and aesthetic impact - Proficiency**

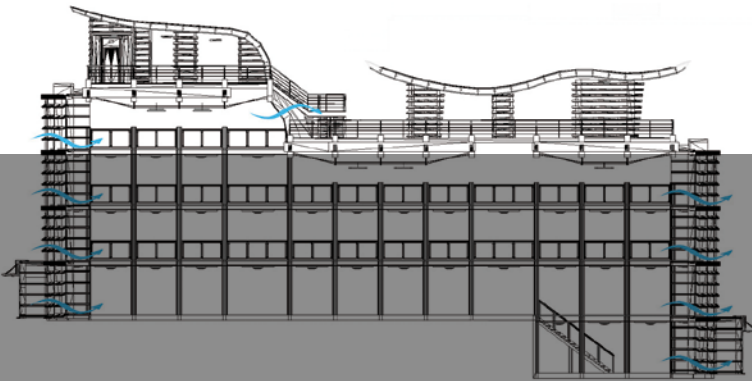


By designing a modular units we can carefully fit the whole construction in the surrounding and make a construction looks compact. This type of construction brings endless possibilities of organizing the space within the building by taking into consideration all human's needs. With excellent disposition of modular units we can create a common spaces which obtain a large quantity of daylight what makes man's residence very pleasant during the time of usage.

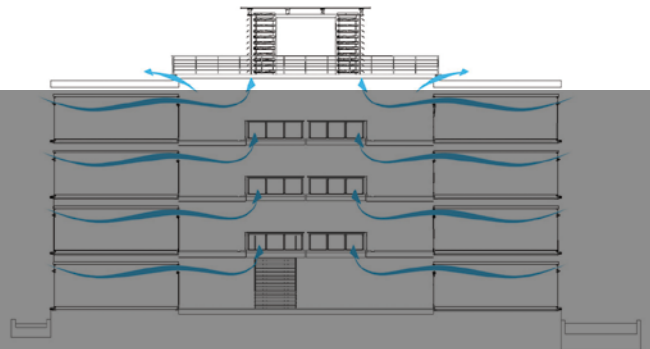
Energy diagram



Ventilation diagram - longitudinal section



Ventilation diagram - transversal section



Top



Left

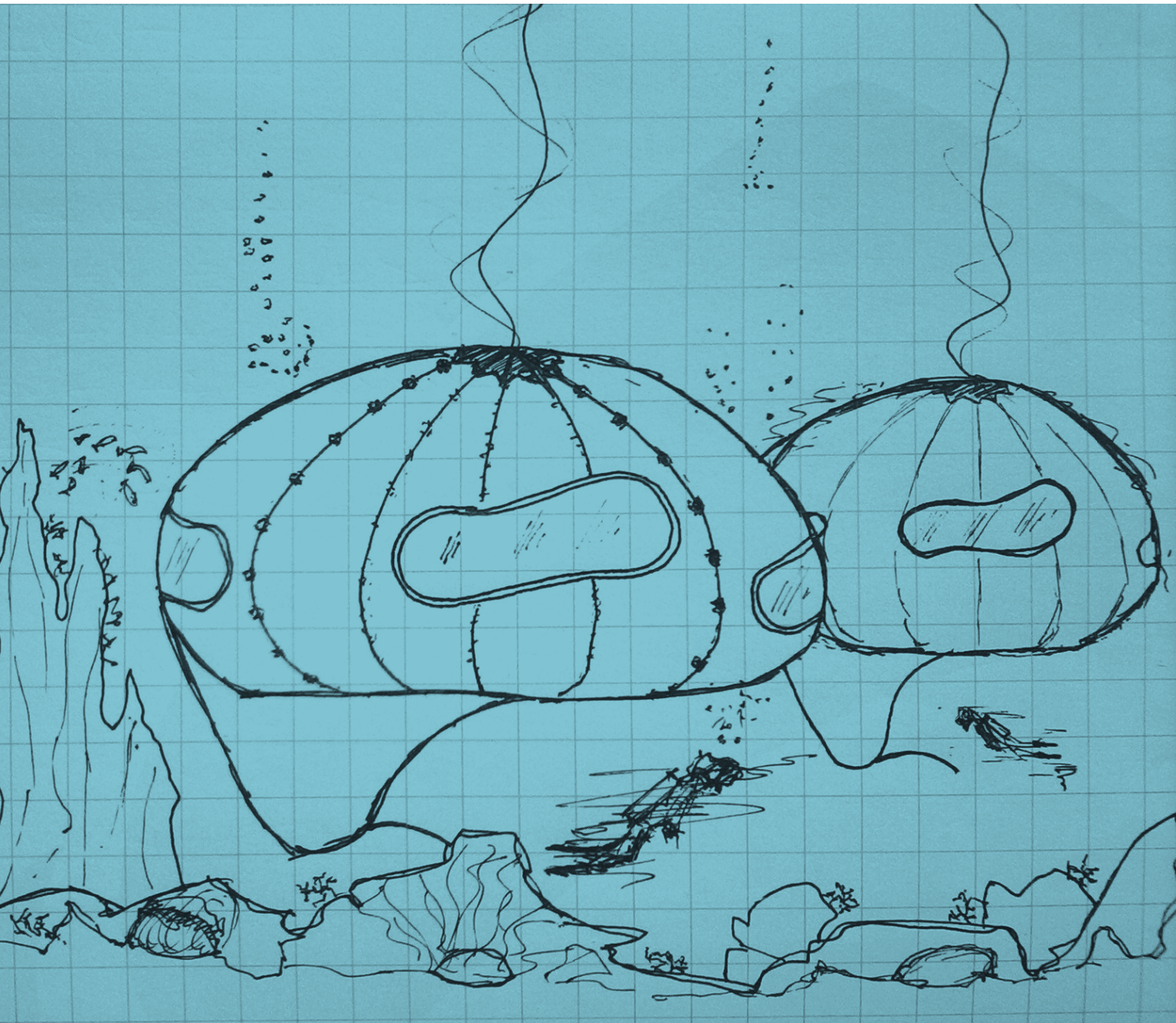


Front



HA11\_KVIOH

# Preliminary design of modular underwater system



## General project data

### Project group 1

Building and civil engineering works	
Competition region	Europe
City	Split
Country	Croatia
Status of planning	Under construction
Formal permission	Application in preparation
Construction start	Apr '14
Client	MoreMore
Intervention	New construction
Project background	Research project
Latitude	43°30'18.68"
Longitude	16°23'51.08
m ASL	-10
Competition	no
Last modified	Mar 23, 2011

## Main author and contact details

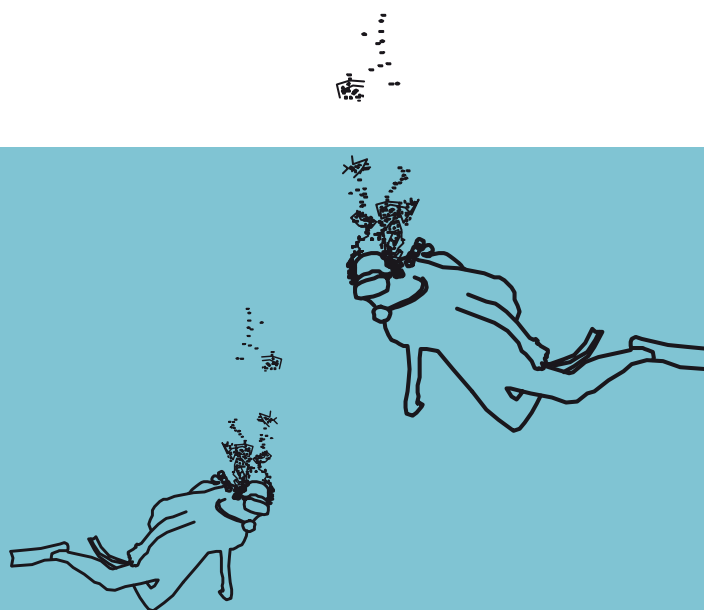
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## Project details

GFA	380 sq m
GV	160 cu m
Construction costs	600000 USD
Site area	800 sq m
Footprint area	0 sq m
Building height	7 m
Building depth	-

## Further relevant key figures

Used materials  
concrete, steel, acrylic glass , wood



## Project description

This system is intended for scientific research and popular or tourist purposes. Its main feature is light manipulation, light apprehension to the destination and setting up to the final position, as well as handling in use.

Underwater construction concept is designed for two purposes:

Research and education laboratory for longer stays scuba divers, scientific workers and students in the organization of the submarine oceanography, hydrology, archeology...

Elite apartments for longer tourist-divers stays, with daily tours of the surrounding seabed, trained in basic course scuba diving.

Modules are immersed in the specified locations at depths of 10-20 m, under the sea level in a selected horizontal plane are connected. Each module is primarily anchored by three anchor blocks adequate weight compared to the buoyancy of the structure. Basic module and anchor blocks are connected by steel ropes. Anchor blocks are placed on carefully examined and prepared sea floor. Connection of modules is performed under sea level.

Entrance to the structure is planned with assistance of autonomous diving apparatus through entrance module. Divers entry into main module is enabled by compressing entrance module with air, equalizing the pressure in entrance module with the depth at which the structure is set up.

Structure is reinforced concrete shell, spherical shape. During the planning of the structure characteristics under compressive load spherical shell was imposed, a material for implementation concrete. Reinforced concrete shell represents a constructive and economic advantage over existing metal structural solutions.

In this application are attached drawings and designs solutions of apartment with two bedrooms.

HA11\_KVIOH

Measuring up to the target issues for sustainable construction

ODNOS OPISNIH KRUŽNICA ZLATNI REŽ

Ø22.1m

Ø13.7m

Ø13.7m

TLOCRT OBJEKTA



### Measuring up to the target issues for sustainable construction

#### Innovation and transferability - Progress ★★★★★

This structure is easily transferable due to its method of anchoring, and innovative in terms of using concrete as the material for its construction. The preparation of the building is carried out on land, the merger and the number of basic modules can fulfill any request the end user.

#### Ethical standards and social equity - People ★★★★★

Exploitation of the building the end user will be closer to the undersea world, through a prolonged stay under the sea.

The construction and use will contribute to the development and revitalization of communities along the coast and provide jobs the local population. Workers will be specially trained for work and life below the sea surface. Guests need to be trained with basic courses in diving with scuba diving equipment.

#### Environmental quality and resource efficiency - Planet ★★★★★

Learning about the sea for a longer period under the surface will develop an awareness of the importance of the sea and its inhabitants on the environment throughout the globe. The emission of heat into the sea is negligible, due to the relatively small volume of the structure. Creating and using structures will not harm the seabed or disturb the marine ecosystem, just the opposite the building itself will be the basis for the artificial reef without disturbing the seabed.

#### Economic performance and compatibility - Prosperity ★★★

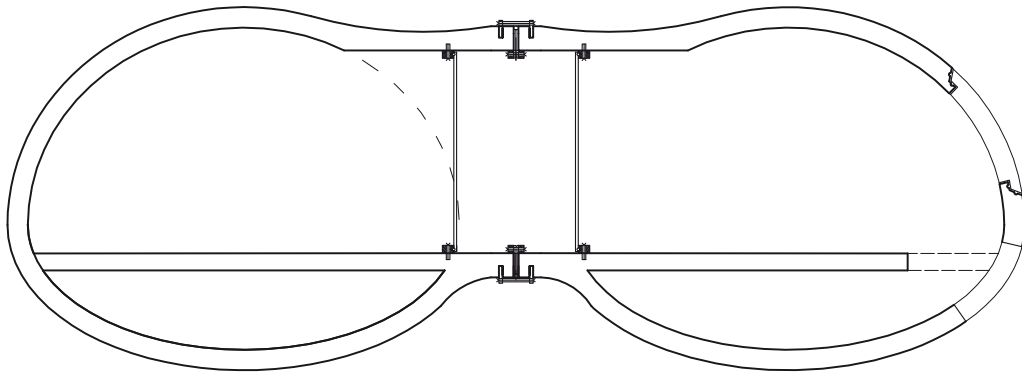
The building will be primarily tourist-oriented and would revitalize coastal communities. Due to attractiveness very soon invested capital will be repaid.

#### Contextual and aesthetic impact - Proficiency ★★★★★

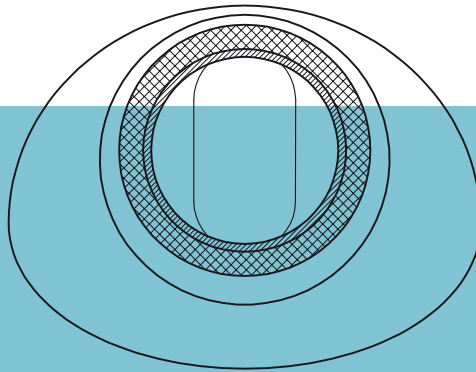
The shell of the basic modules is designed as a skeleton of sea urchin, a visual impression below the sea surface will create the impression urchin colony. Flexibility of design will allow its easy move to the desired location. The interior of the building will be designed in a way that will be subordinate to the sea and its requirements.





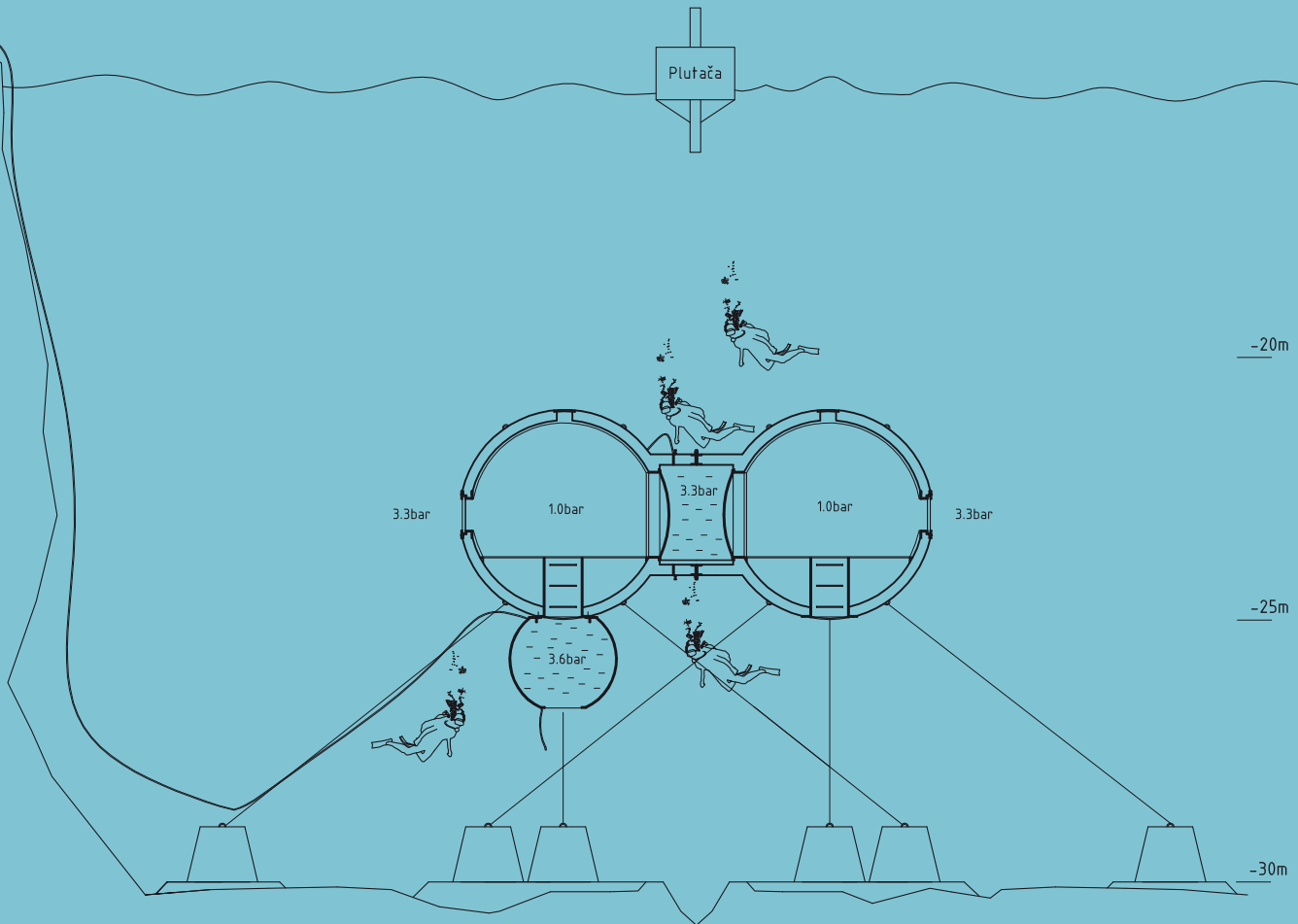


Presjek a-a



Postrojenje za snabdjevanje

Plutača



HA11\_OMNCS

# Visitors Center, National Park Northern Velebit, Krasno



## General project data

### Project group 1

Building and civil engineering works	
Competition region	Europe
City	Krasno
Country	Croatia
Status of planning	Final design stage
Formal permission	Approved
Construction start	Apr '12
Client	Public Institution "National Park Northern Velebit"
Intervention	New construction
Project background	Public commission
Latitude	44°49'12.60"N
Longitude	15° 4'15.30"E
m ASL	715
Competition	no
Last modified	Mar 30, 2011

## Main author and contact details

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## Project details

GFA	1444 sq m
GV	4870 cu m
Construction costs	1815000 USD
Site area	919,9 sq m
Footprint area	367,4 sq m
Building height	13,5 m
Building depth	3,0 m

## Further relevant key figures

### Used materials

Concrete, Brick  
Ventilated facade - wood and/or ceramics  
Stone

## Project description

National Park Northern Velebit is located in Licko-Senjska County in Croatia and covers 109 km<sup>2</sup> of Velebit mountain. Park authorities have their headquarter in village of Krasno, just couple of kilometers outside the Park.

The idea of building a Visitors Center is based on the fact that the Park is closed for a good portion of the year due to the snow conditions. This way it would be possible to double the visits, and to give the visitors the possibility to experience the beauties of the Park even in the winter. The main purpose of the building is to house the permanent exhibition about the Park, as well as to be a starting point for the organized visits to the Park.

Since National Park is an institution that is strongly connected to nature, and deals with its exploration and preservation, one of the first decisions when starting this project was to build the Visitors Center by the same principles. Somewhere along the way, an idea of added value to the exhibition was born, and we decided to devote a part of the exhibition to the building itself. In this presentation we would show how the building itself correlates to the nature and what are its advantages comparing to a classic built. Visitors would be educated in which way a building can harm the environment, and what are the ways to prevent it.

We hope that this idea would stimulate many visitors to start thinking The Green Way.



HA11\_OMNCS

Visitors Center, National Park  
Northern Velebit, Krasno



## Measuring up to the target issues for sustainable construction

### Innovation and transferability - Progress

★★★★

Building uses a number of sustainability systems and mechanisms. Main design features are based on passive and active design mechanisms, as well as on good management of those features.

Passive design mechanisms: building orientation - south, building shape - good volume to envelope surface ratio, Trombe-Michel Wall - harvesting the Sun, insulation - passive building properties (less than 15 Kw/m<sup>2</sup>a for heating), collecting the rain water from the roof and using it to water the plants. Active design mechanisms: heating - bio-mass, photovoltaic cells, ventilation through recuperation of air temperature, ecological lightning, energy management system.

Although each and every design feature is not new or revolutionary, by combining many of them and managing them properly, the building should reach high level of sustainability. The intention was to experiment with different systems, so they can be applied in the future builds.

### Ethical standards and social equity - People

★★★★★

Krasno is a small village in relatively undeveloped area. Museum building in that environment is going to have motivating impact to the people of the area, as well as to their comprehension of sustainable development. What matters is that this -bigger- and -nicer- building is the one that promotes such values as culture and ecology.

### Environmental quality and resource efficiency - Planet

★★★★★

Project contributes to the environment in two main ways: by using sustainable building mechanisms, and by educating people about it. Building uses a combination of different sustainability systems and mechanisms such as: building orientation - south, building shape - good volume to envelope surface ratio, Trombe-Michel Wall - harvesting the Sun, insulation - passive building properties (less than 15 Kw/m<sup>2</sup>a for heating), collecting the rain water from the roof and using it to water the plants, heating - bio-mass, photovoltaic cells, ventilation through recuperation of air temperature, ecological lightning, energy management system. Local materials (stone, wood) are used in construction. Biomass for heating is produced by local suppliers. In the building, an exhibition part tells the story about the building and its sustainability, and teaches visitors how to think and live The Green Way.

### Economic performance and compatibility - Prosperity

★★★★

Most of the finances come from government and European funds.

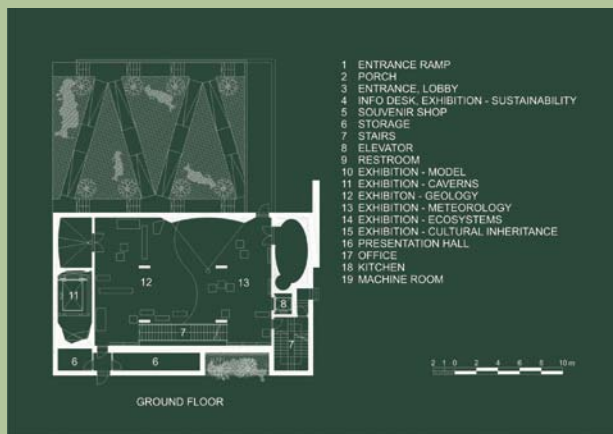
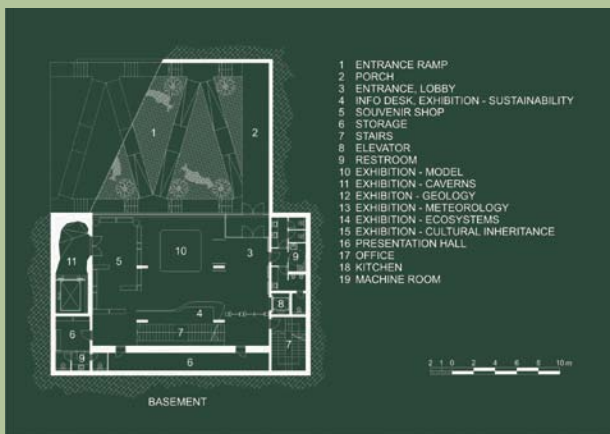
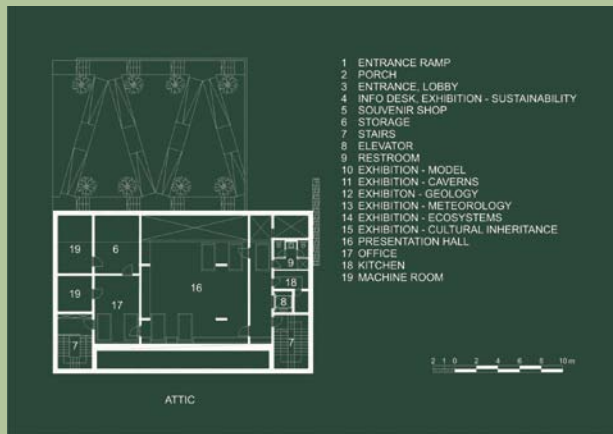
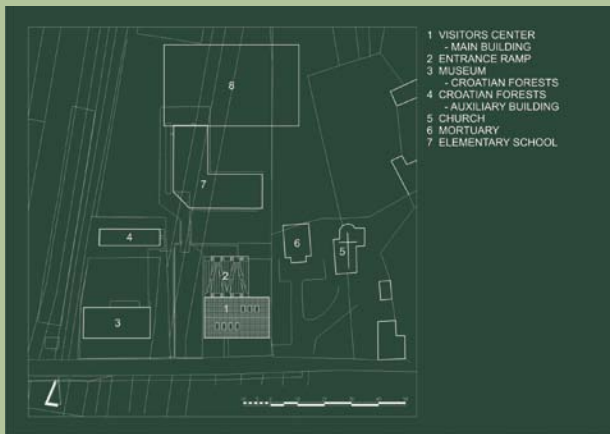
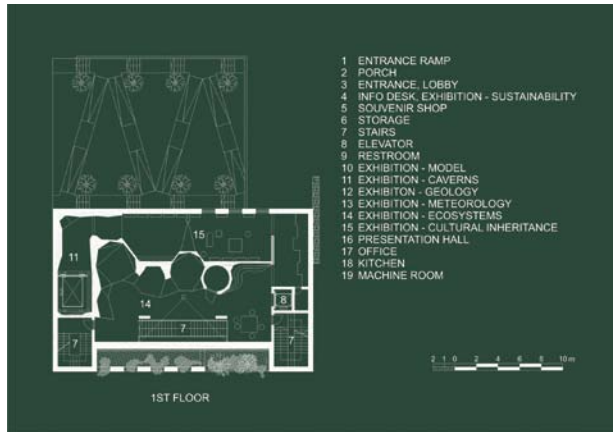
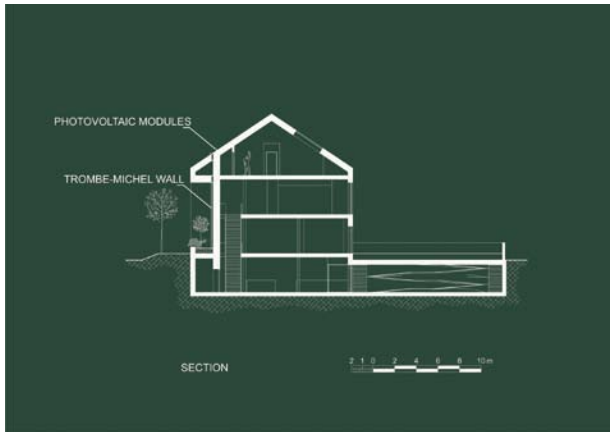
Museum itself does not bring a lot of funds, but has an impact on local tourism. The idea of building a Visitors Center is based on the fact that the National Park Northern Velebit is closed for a good portion of the year due to the snow conditions. This way it would be possible to double the visits, and thus to contribute to the local community by bringing more people to village of Krasno.

### Contextual and aesthetic impact - Proficiency

★★★★

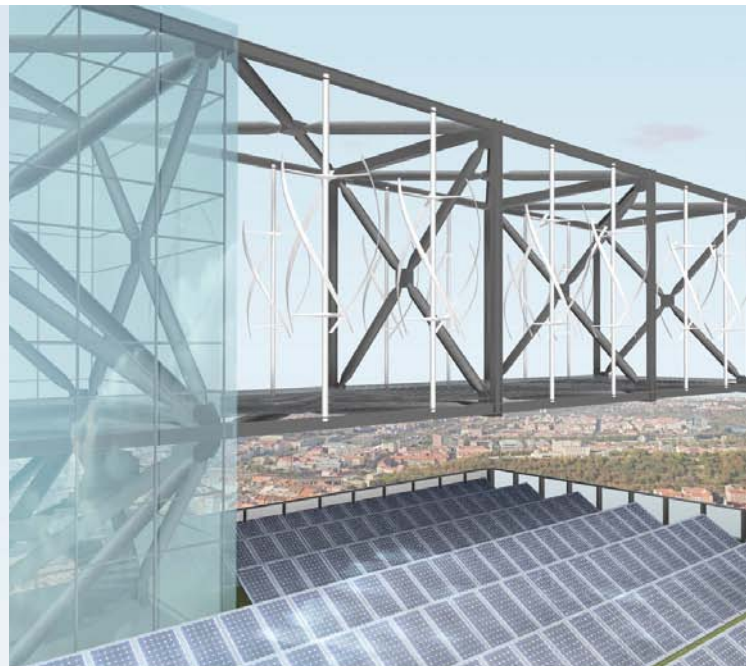
The building design is simple which corresponds to the traditional architecture of the region. Its concept can be described as Robert Venturi's Decorated Shed. The decoration is taken from the context of National Park, using its colors (pixelated photo) and shapes (altitude profile of Premuzic Trail - a famous educational trail in the park).

Along with the other important buildings of the town, it forms a micro center.



HA11\_UBAWK

# City Business Complex



sustainable systems

restaurant

offices

sustainable systems

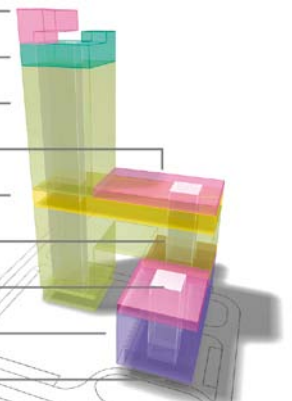
banquet hall

spa center

sustainable systems

shops

hotel



## General project data

### Project group 1

Building and civil engineering works	
Competition region	Europe
City	Zagreb
Country	Croatia
Status of planning	Final design stage
Formal permission	--Other--
Construction start	May '13
Client	Letvica Ltd.
Intervention	New construction
Project background	Private investment
Latitude	45.802344
Longitude	15.992577
m ASL	122
Competition Outcome	yes
Title	Other prize or acknowledgment Open urban planning- and architectural competition for the Zone M2-B in Zagreb, March 2011
Last modified	Mar 29, 2011

## Main author and contact details

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*Distribution of prize money*  
Main Author: 50%, Further author 1: 50%

## Project details

GFA	70162 sq m
GV	283264 cu m
Construction costs	-
Site area	7742 sq m
Footprint area	3412 sq m
Building height	131,40 m
Building depth	27,30 m

### Further relevant key figures

Envelope surface: 23.128 sq m; GV/GFA: 4.037; NFA/GFA: 0.804.

### Used materials

Structure: concrete skeleton structure with service cores. Facade: ventilated double glazing front with electrically-powered blinds. Products: the latest solar photovoltaic technology in means of "Frits"(Schüco ProSol TF) integrated in the S/E/W oriented parts. Green roofs accommodate solar thermal collectors. Wind turbines "Quietrevolution qr5" (12 units) placed on the top of the tower.

## Project description

General: Situated in the centre of the capital of Croatia Zagreb, the new City Business Complex should accomplish a sustainable project goal: architectural integration of the wind turbines in a high rise multipurpose building in the middle of the town, among other sustainable "invisible" energy systems and products used in/on the building.

Integration of the solar thermal collectors and especially PV modules into the building skin is advanced thanks to new technologies (Frits). The implementation of the wind turbines in/on the buildings in urban environment has been so far neglected and not enough explored due to technical obstacles such as noise, vibrations, and aesthetic reasons. The latest generation of wind turbines (in our project model "Quietrevolution qr5") formally revolutionises an implementation and usage in dense urban areas.

Architectural concept: CB Complex is designed as an integral structure of different heights, creating harmonic and dynamic architectural composition. The main building's mass has the same section which stepwise evolves from the horizontal volume into the high rise building. On the top of the skyscraper is a dominant cantilevered construction with a set of wind turbines of the latest generation. Lifting the middle part of the ground, full insolation with deep morning sun is provided even for the parts of the building which would have been insolated only in the afternoon (hotel rooms). Concept of the vertical zoning and overlapping of the functions (offices over hotel) reduces a number of the building's service cores to the minimum and provides more public and green space beneath. The new CB Complex consists of: 1. Office space, A-standard: 24.975 sqm, 2. Hotel, four-star with banquet hall: 12.187 sqm, 3. Fitness- & Wellness Centre: 878 sqm, 4. Restaurant on the top of the tower: 855 sqm, 5. Commercial and gastronomic spaces on the ground level: 230 sqm, 6. Underground car parking garage with 769 parking spaces: 31.800 sqm. Flexible office space is located in two major parts: a) tower with panoramic elevators, b) middle part with high-efficiently usable floor area.

Hotel: the depth of the "facade stripe" (180 cm) allows variations of the required mix of single- and double rooms.

Surround civic space and pedestrian approaches to the CB Complex should form an integral part of the overall design with innovative stone paving, emphasizing the high quality of surrounding public area. LED illuminated "facade stripe" dominates in the night skyline of Zagreb, semantically symbolising flow and sustainability of the energy itself.

The statement by Frank Lloyd Wright in 1956. regarding a new generation of high rise buildings can be quoted and applied as well to the sustainable high-tech structures today in general: "No one can afford to build it now, but in the future no one can afford not to build it!"



## Measuring up to the target issues for sustainable construction

### Innovation and transferability - Progress

★★★★★

Our principal design goal was architectural integration of the wind turbines in a high rise multipurpose building in the middle of the city. The new CB Complex forms an iconic, high-tech structure and creates a strong architectural statement, signalling a striking approach to the sustainable buildings. It should act as a “prototype” and stimulate rethinking and development of the new generation of wind turbines and implementation of similar “green” buildings in Croatia as well as elsewhere.

### Ethical standards and social equity - People

★★★★★

Whole system thinking is the key to future sustainable development and design of building systems. It is important to consider energy flow in a way which allows its true impact in ecological, economical and social terms. Success will only be achieved by integrated interdisciplinary design teams. The holistic approach relating to sustainability and energy efficiency in architecture and urban design must be seen as a challenge, which can lead to new design qualities.

### Environmental quality and resource efficiency - Planet

★★★★★

The design and planned construction were made according to the principles of sustainability in order to keep energy use and future cost for tenants at low level and to produce all required energy on the site. Energy demand is remarkably reduced by applying a ventilated double glazing front with electrically-powered blinds on the top and at the bottom. The latest solar photovoltaic technology (“Frits”) is integrated in the S/E/W oriented parts. Green roofs accommodate solar thermal collectors. Wind turbines of the latest generation are placed on the top of the tower.

Geothermal heating pumps are used for additional heating and cooling. AC system will use warmth recuperation, a process for cooling in summer and waste warmth generated by AC system in winter. Rain water is used for sanitary and green roof, i.e. greenhouse irrigation. All rooms are outfitted with the latest sensor technology to minimize energy consumption. The interior and exterior space is fully equipped with LED lighting.

### Economic performance and compatibility - Prosperity

★★★★

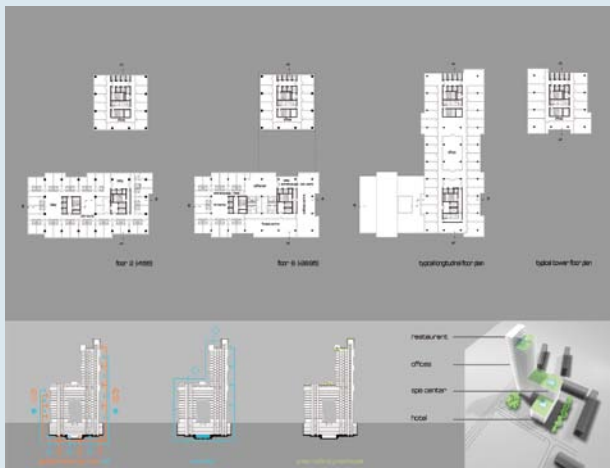
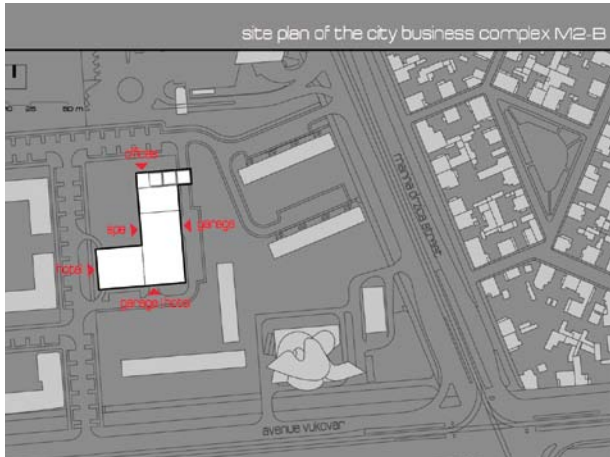
Our rewarded project is also a response to the question of the degree of utilisation of building stock today. The usage age of a typical urban western building is very low. Initial concept was to design a multipurpose building with identical structural modular grid (810 cm x 810 cm) and same depth (27,30 m) in the horizontal and vertical section. The result is a maximum flexibility of usage which simultaneously minimises the need of artificial lighting.

### Contextual and aesthetic impact - Proficiency

★★★★

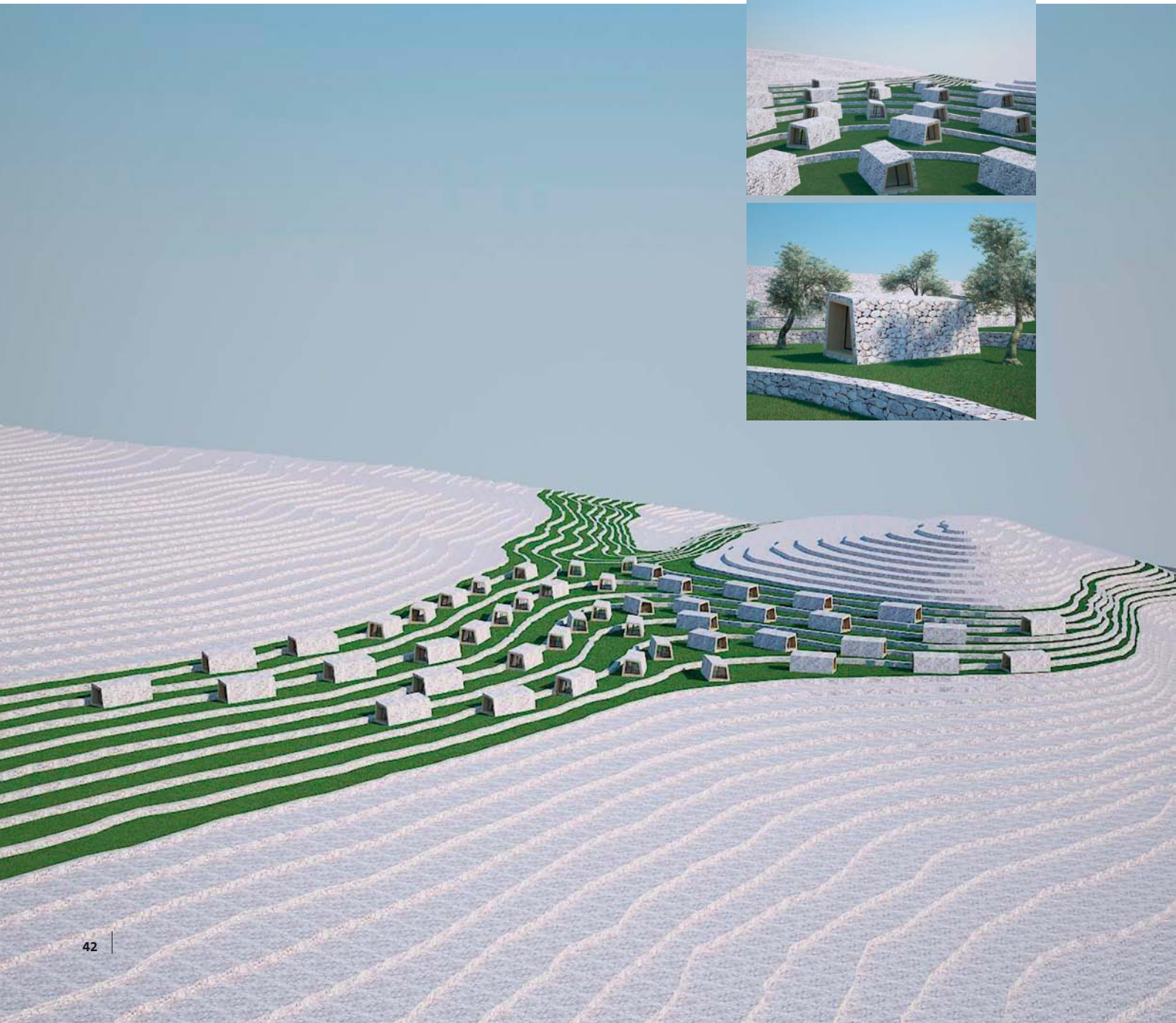
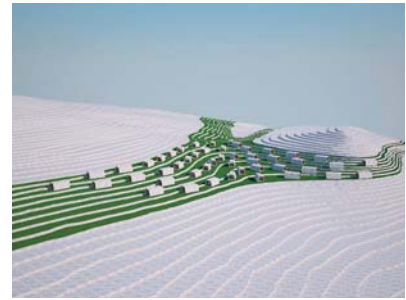
The present use of land in cities is not sustainable. Optimising urban density will be a key component of any strategy to maximise energy efficiency. Several research projects indicate a potential for increasing the energy efficiency of cities by the use of tall buildings in urban developments. The urban density can be increased by the use of vertical structures by factor of nearly two compared to traditional European city configurations. The Project provides a high efficient and functional utilization, taking simultaneous into account economical and rational use of land. With its quality dimensioning of building’s mass of different heights, architectural design refers to its surroundings and with articulation of urban space and iconic architectural design actuates a nucleus for creating a new urban context.





HA11\_VMMWB

# Sustainable colonization



## General project data

### Project group 1

Building and civil engineering works	
Competition region	Europe
City	Dubrovnik
Country	Croatia
Status of planning	Contract awarded
Formal permission	--Other--
Construction start	Jan '12
Client	Park Orsula d.o.o.
Intervention	New construction and conversion
Project background	Private commission
Latitude	42 30 47 N
Longitude	18 20 38 E
m ASL	15
Competition	no
Last modified	Mar 28, 2011
Title	architectural competition for the Zone M2-B in Zagreb, March 2011
Last modified	Mar 29, 2011

## Main author and contact details

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### Distribution of prize money

Main Author: 50%, Further author 1: 50%

## Project details

GFA	1000 sq m
GV	3168 cu m
Construction costs	-
Site area	15000 sq m
Footprint area	1000 sq m
Building height	3 m
Building depth	-

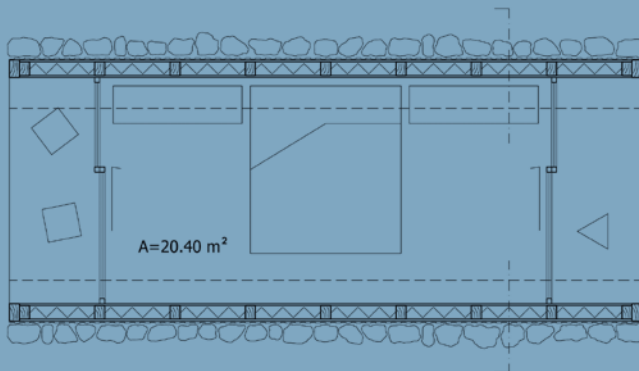
### Further relevant key figures

Used materials  
wood, dry stone walls, glass

## Project description

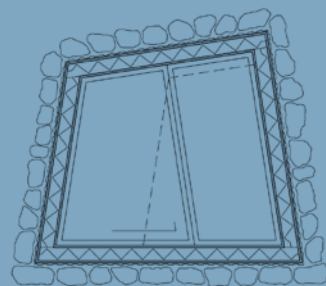
The aim of the project is to combine traditional agriculture - olive groves on terraces in karst terrain, with tourism- settlement of accommodation units with level of service between apartment resort and camp. Adaptable, multifunctional, constructively and aesthetically purified module is the basis of the whole project which is designed for location beside the Adriatic Sea coast, near Dubrovnik, Croatia.

## Module - Basic unit

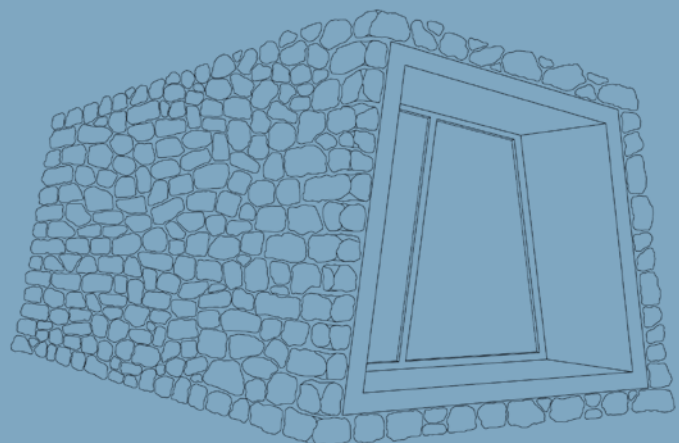


Ground - plan, accommodation unit

- Bearing structure is made of wooden beams bound into frames
- Frames are connected with double wooden panel
- Inter-panel space is filled with organic-based thermal insulation
- Outer panel is coated with solid steam-permeable water-resistant dimpled membrane
- Onto the dimpled membrane rugged, *in situ* found, stone blocks are piled



Section





**Measuring up to the target issues for sustainable construction**

**Innovation and transferability - Progress**



During transformation of karst terrain into a cultivated soil, simple wooden modules, covered with rugged, on-site found stone blocks, are placed between olive tree seedlings. Module, basic accommodation unit, remains in close physical and symbolic contact with nature, merged with Mediterranean landscape. In different regions and climate areas, these wooden modules may be covered with other, in that area naturally occurring, materials like wisps of straw or clay. In addition, designed module may be used as a small size facility for different purposes, such as stand, toilet, reception, information centre, gardening shed, etc.

**Ethical standards and social equity - People**



This project evokes and re-evaluates old skills of converting karst terrain into cultivated one, brought to our shore by colonizers from Ancient Greece. Historical heritage combined with cultivated landscape, physical work, sea and stone, becomes object of interest for growing population of lovers of Mediterranean as it once was. Settlement of simple, uniform modules evokes egalitarian society, which resembles more to an Ancient Greek polis than to a corporative, five star resort. Each module becomes a small and modest stone temple dedicated to the charms of nature.

**Environmental quality and resource efficiency - Planet**



Project is based on an assumption that a number of potential guests is willing to sacrifice a part of its comfort in exchange for a different kind of enjoyment. Subsequently, only basic sanitary units with chemical and biological processing of wastewater and low-voltage solar electrical energy supply solely for night lighting are provided. Wooden module is protected with biodegradable thermal insulation. On-site acquired stone protects wooden structure from atmospheric influences.

**Economic performance and compatibility - Prosperity**



Initially, due to its nature, project will rely on support and subvention from local authorities. During construction and maintenance of the project local craftsmen will be engaged. Once set in, settlement should be occupied from early spring to late autumn when there is an olive harvest, as an additional attraction for tourists. Implementation of this project would provide income for several local families employed.

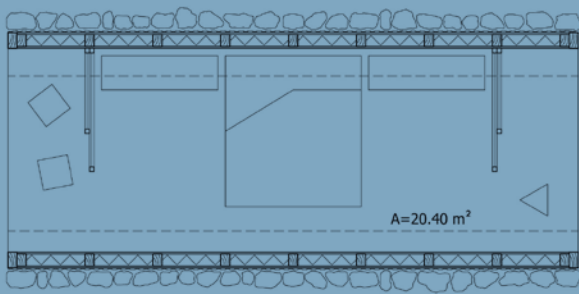
**Contextual and aesthetic impact - Proficiency**



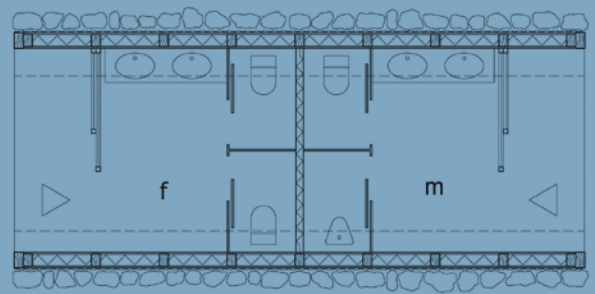
Described module is original product. By eliminating all unnecessary details, simple and pure, easy-to-build form is created. Roof plane is inclined for the purpose of easier water draining, and side planes are inclined for the purpose of easier dry stone blocks building. Two side doors enable transversal ventilation and entrance niches prevent excessive sun exposure. Several functional determinants are used for creating form which seduces with its simplicity.



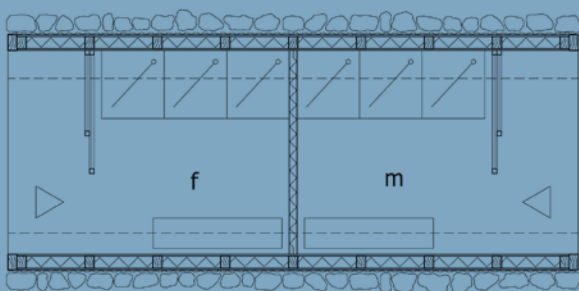
Module - different utilization



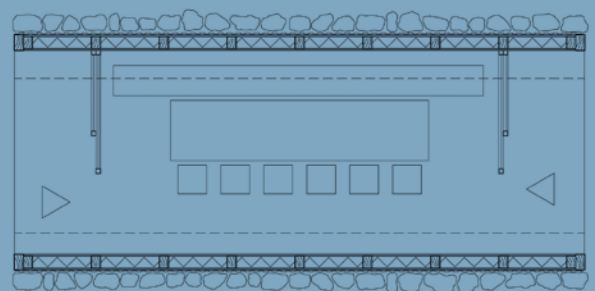
Accommodation unit



Sanitary unit - toilet



Sanitary unit - shower

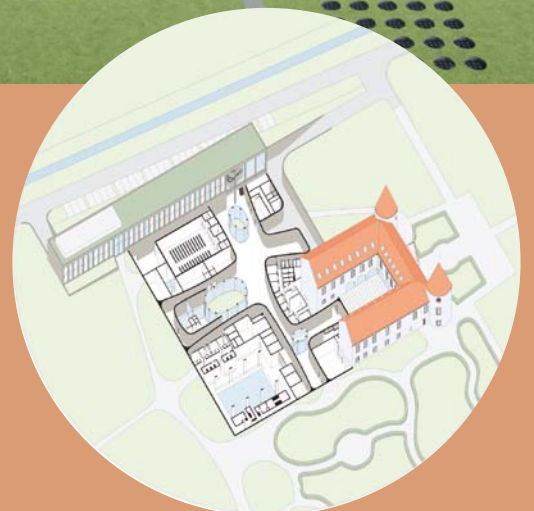


Dining room



HA11\_VVCRS

# Reconstruction of the manor in Gornja Rijeka



## General project data

### Project group 1

Building and civil engineering works	
Competition region	Europe
City	Gornja Rijeka
Country	Croatia
Status of planning	Final design stage
Formal permission	Approved
Construction start	May '12
Client	Split Ship Management
Intervention	New construction and conversion
Project background	Private commission
Latitude	46.06.18
Longitude	16.23.28
m ASL	195
Competition	no
Last modified	Mar 30, 2011

## Main author and contact details

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### Distribution of prize money

Main Author: 50%, Further author 1: 25%, Further author 2: 25%

## Project details

GFA	9400 sq m
GV	74500 cu m
Construction costs	20 mil. USD
Site area	37000 sq m
Footprint area	1800 sq m
Building height	18 m
Building depth	9 m

### Further relevant key figures

#### Used materials

Traditional materials such as brick, tiles, stone and wood will be used for manor reconstruction.

Prefabricated exposed concrete with transparent epoxy finish, stone from local quarry, brick finish.

## Project description

Overall condition of manors in Croatia is extremely poor. Our analysis at the beginning of the project showed that even reconstructed manors play very passive role in the community life, both economical and social. They are in fact isolated islands of museums and restaurants, with no regard towards municipal they are located in.

Our project task was the reconstruction of the manor Gornja Rijeka Erodoy Rubido and design of additional convention centre and hotel building in the manor complex. The new building consists of two parts: 1. the hotel in the position of the manor stalls in the baroque period and 2. the underground convention centre. The hotel, since it is on the ground is under strong influence of the baroque manor and is therefore very respectful of it. Its columns, their rhythm and proportions are contemporary interpretations of baroque facades, while the hotel's height is the

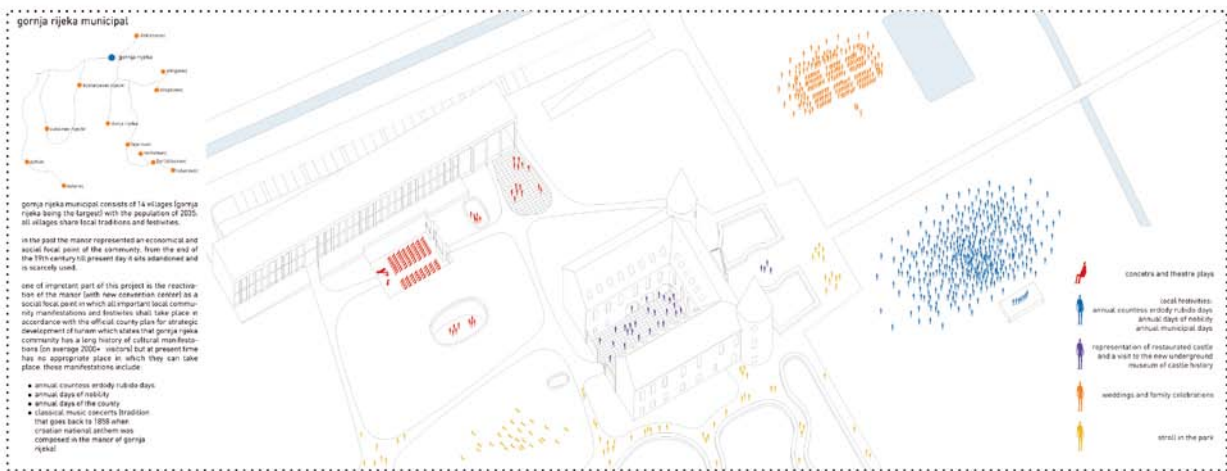
same as that of the manor cornice. The convention centre was put underground so not to disturb the delicate balance of centralized baroque manor and its gardens. Since it is underground its shape and appearance are not directly affected by the manor site composition therefore its design is free of any direct historical influence.

Energy strategy played important role in the overall design process. The energy consumption is therefore negligible, as the geothermal system, natural ventilation, bio fuel and other innovative techniques maintain the efficiency level above 90%.

The impact of this project on the municipal and county will be significant. Municipal of Gornja Rijeka will get a strong social focal point for its annual celebrations which it now lacks. Partnership between convention centre and local farmers will boost local economy as all the centres' needs for fresh food and biofuel will be satisfied by local farmers' production. This will reduce the high unemployment rate of the municipal as agricultural land efficiency factor will rise from below 45% to well over 95% after the project completion. This will naturally have a great impact on what is now one of the poorest municipalities in Croatia.

This project distances itself from past reconstructions of the manors in Croatia, as it is the prototype of reconstruction where the community as a whole, both in social and economic view, will benefit from it. It will not be one more isolated island of personal economic interests but the main wheel of local economic growth and prosperity.

reactivation of manor complex as a municipal focal point



**Measuring up to the target issues for sustainable construction**

**Innovation and transferability - Progress**



Manor as a representative of a cultural heritage acts as a vivid reminder of human cultural development. As such, it plays an important role in both local and global social circles. The majority of manors in continental Croatia today are abandoned as ghost cities, forgotten by authorities and left in a ruin state. Rubido Erdödy manor is one among many precious instances in continental Croatia. Its redevelopment means not only a cultural progress -- this project shows a multilevel scale of benefits that occur when such a complex system is brought again on its feet. Using innovative technologies in reconstruction and modern ideas in project management, the new Rubido Erdödy congress center serves as a paradigmatic sample. If the project's principles and know-how are successfully transferred onto other culturally-protected site's renovation projects, both local and global embetterments will occur in their closer and broader surroundings as well.

**Ethical standards and social equity - People**



Reactivation of the manor complex plays a significant role in the community's social life. Old traditions and manifestations that take place in the municipality of Gornja Rijeka for centuries are heavily connected to the history of the manor and its influence to Croatia's culture. Not only housing existing ceremonies -- the new Rubido Erdödy complex is expected to act as a central focal point of the community on other basis as well. It is anticipated to become the municipality's main concert and theatre stage. It is going to serve the community as both open-air and enclosed museum in situ, testifying its rich history and importance in the contexts of political history and identity, landscape design, history of architecture and art, as well as presenting the high-end restoration methods that were applied. People of the area, no matter of their status, are offered a unique cultural and educational facility that will make the social bonds even stronger.

**Environmental quality and resource efficiency - Planet**



Construction site: minimal disturbance of the process by the means of controlling soil erosion, waterway sedimentation and air dust generation.  
 Landscape: restoration of the original flora, introduction of the new species by the approval of the experts.  
 Heating and cooling: geothermal pumps.  
 Water: constructed wetlands for natural waste water treatment, tap water/ graywater selective usage, water capturing system.  
 Waste management: redirect the recyclables back to the manufacturing process.

**Economic performance and compatibility - Prosperity**



International context - benefit to owners: a feasibility study/ cost effectiveness has been made that shows a net profit of EUR 1.00 - 1.24 mil. a year with a 12.5 - 14.9% profit margin. The payback time for the investors is estimated to 12-15 years.  
 Regional context - benefit to community: variety of middle- and long-term vacancies are opened, the study shows numerous new tourist and sport agencies will emerge to cover demanding guests' aspirations. Market share is expected to rise over time.

**Contextual and aesthetic impact - Proficiency**



Respond to the natural and artificial context was a priority one issue in the early design stage. Co-working with a team of experts involving cultural conservators, landscape designers and art historians, this project embraces the original values of a specific space-time. Cautious restoration as an imperative is present in every detail of the complex. Flexibility of use and dual significance (private congress center, public cultural spot) is enclosed in a body of exceptional form and ambiance.



# spatial characteristics of manor's reconstruction

## Manor in Gornja Rijeka Erdody Rubido

### 1 concept

#### The landscape

- explore the original landscape of the manor dating back to 18th century
- investigate the style period, its characteristics and agenda, how it was used and what benefits it had on the perceptions of the whole

#### The manor

- take into consideration data from Ministry of culture and find out what design procedures are permissible
- organise an expertise to deploy construction probes inside the manor, grab an insight of the structural quality and durability status of constructive components
- work inside the framework of permissible actions, take into account what is desirable
- emphasize the historical qualities, design with contemporary aspirations on mind

### 2 tools

#### The landscape

- restore the original flora, emphasize the pond, restore pathways following the organic baroque form
- make the contemporary landscape design reminiscent of the restored south and east baroque gardens

#### The manor

- Use the manor's ground floor to serve as a representative entrance lobby, following the restaurant and a cafe with the access to the manor's atrium
- place accommodation rooms inside the manor's wings and the attic

### 3 result

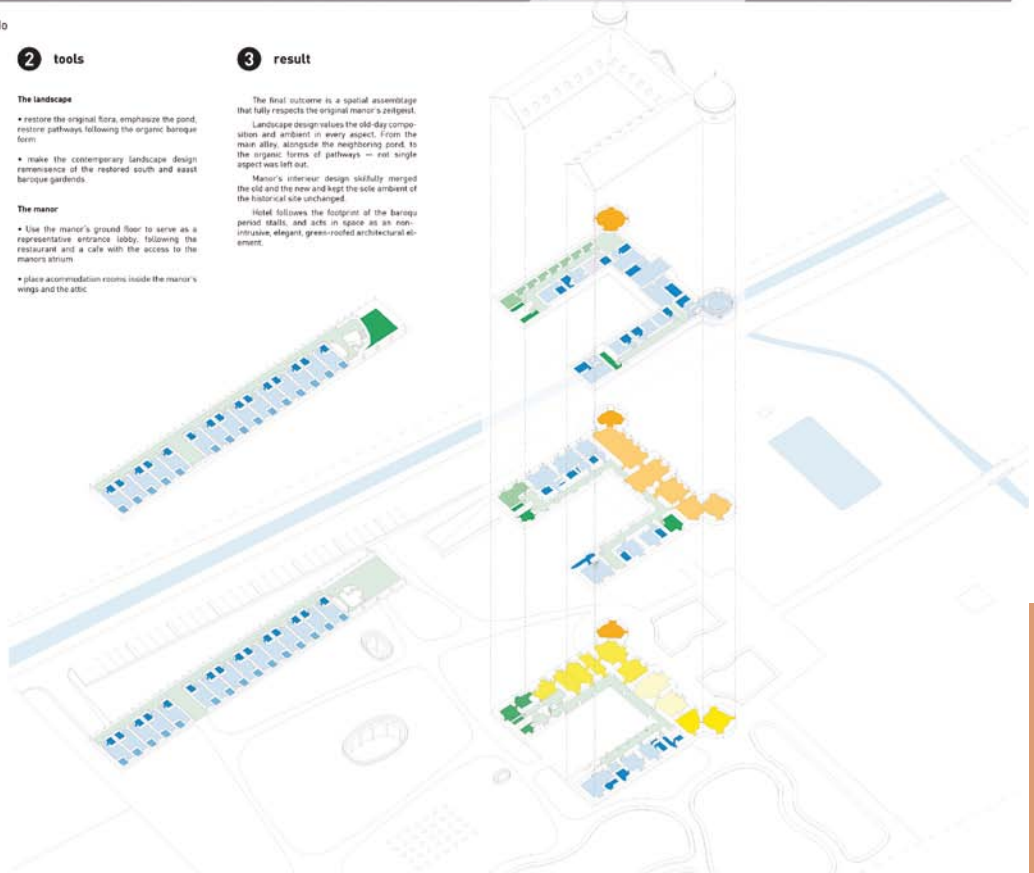
The final outcome is a spatial assemblage that fully respects the original manor's zeitgeist. Landscape design values the old-day composition and ambient in every aspect. From the main alley, alongside the neighboring pond, to the organic forms of pathways – not single aspect was left out.

Manor's interior design skillfully merged the old and the new and kept the sole ambient of the historical site unchanged.

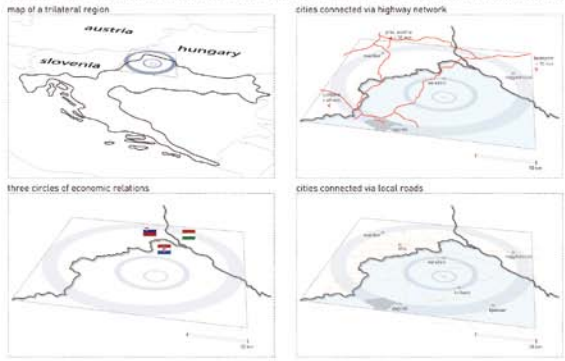
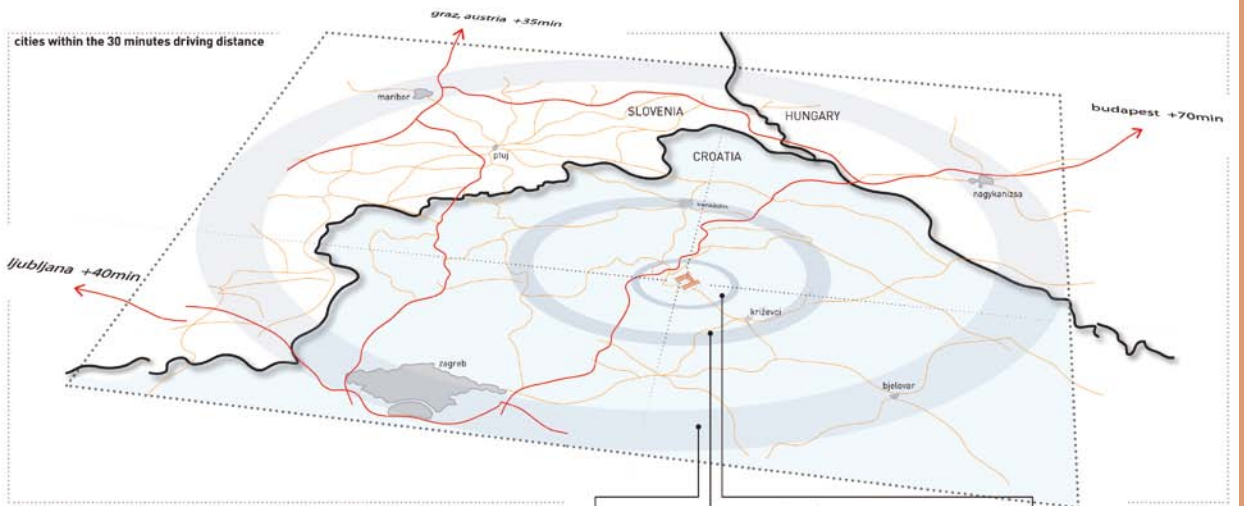
Hotel follows the footprint of the baroque period stails, and acts in space as a non-intrusive, elegant, green-roofed architectural element.

#### the project's usage functions

- communication
- storage
- elevation void
- entrance lobby
- restaurant
- cafe
- hotel room
- terrace
- bathroom
- conference hall
- the old chapel



# trilateral scope of regional influence



**1 international congress center**  
The new Rubido Erdody complex will act on the international scene of important political, economic and congress happenings. Conforming to international standard of five-star hotels, with extraordinary position in the landscape below the Kalnik mountain and top-notch services included, it will offer a quite different experience to that compared of the city environments in the 50 mile radius.

Serving on a high-demand scale of international affairs programs, it is assured to keep the constant financial income to level its demanding services with ease. The benefit for guests is unmatched countryside experience, the benefit for the centre is steady money income for operation maintenance.

Perhaps the most important issue here is the commotion to the centres located within close cities. The five-star city hotels of Zagreb, Maribor, Ljubljana, Graz and Nagykiszasa are already overlooked by such a demand of service. Their capacity can't hold up to the needs. Rubido Erdody center here comes as a two-fold answer. Not only does it supply the congress tourism market with a quality service, it also shows a countryside can be a superior alternative.

**2 kalnik region influence**  
Sub-mountain region of Kalnik finds a substantial positive impact when the new Rubido Erdody center stands on its feet. A wide number of various middle-term and long-term vacancies will be opened, and huge industrial, technological and craft products will be required in the work process of restoration, reconstruction and building.

Such a demanding project will employ a high number of people from the region and will boost the expertise programs for the Italian learning, as such will be highly appreciated. The progress will not only go in terms of higher employment rate, but will stimulate higher investment in education as well. So it will touch the grounds deeper than conventional learning facilities, since the people will get a sense that it's a direct connection to their welfare.

One of the most prominent benefits is the impact it will have on cultural, educational, religious and touristic offerings of Kalnik region. Recent study shows, those offerings are more quite limited, the number of corresponding services in operation is today relatively low, in sports too – the natural qualities of surrounding area guarantees much more.

The new congress center is planned to make ground for variety of those offerings.

**3 municipality economy catalyst**  
The agricultural lands of Gornja Rijeka municipality are today at the half efficiency rate. Most of the agricultural lots are being used to produce every-day food for the local people to eat and sell in the local market. There hasn't been much thought put into branding the local specificities nor in using the land in a more efficient way.

This project sees the new complex as an ignition force that will boost the economy of the municipality. Without changing the core principals of agricultural land cultivation, it brings a strategy that will in 10 year period double the agricultural income of the people of Gornja Rijeka municipality. The costs are not expected to be high since the lots are not used are in the direct connection to used ones.

With more efficient food production, with selective orientation to fulfill the centre's demanding demands (local brands of high-quality cereals, fruits, vegetables, meat and wine), the municipality is given a chance to make an additional income in supplying the 100% centre's feeding needs. The extra gallons are sold to outer markets and more profit is earned. In that way, municipality sees the centre as its economic catalyst.

HA11\_XZTZV

# Underground City XXI



## 01\_Re-covering the premises

Promotion for local production

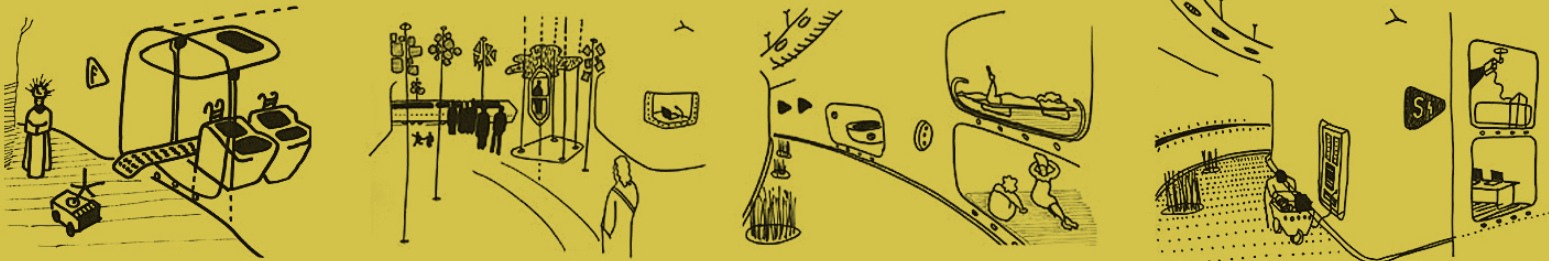
- 1 Lift shaft / entrance to tunnel
- 2 Cultural and capacitation center
- 3 Promotion center for local production : goods-crafts-services-...
- 4 Offices / public + private
- 5 Offices and Studios
- 6 Cafe and Restaurant
- 7 Plants and horticulture retail
- 8 Pavement and Multipurpose surface / support for the cultural and promotion centers / fairs-gastronomy-...

## 02\_Re-building the premises

Production and retail facilities based on the existing ones

## 03\_Re-positioning the market

## 04\_Proposed park / sportscape



## General project data

### Project group 2

Landscape, urban design and infrastructure

Competition region	Europe
City	Labin
Country	Croatia
Status of planning	Contract awarded
Formal permission	--Other--
Construction start	Jan '14
Client	City of Labin / L.A.E.
Intervention	New construction and conversion
Project background	Public commission
Latitude	45° North
Longitude	14° East
m ASL	0 - 324
Competition	no
Last modified	Mar 30, 2011

## Main author and contact details

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## Project details

GFA	-
GV	-
Construction costs	-
Site area	12 000 000 sq m
Footprint area	-
Floor Area Ratio	-
Site Occupancy Ratio	-

## Further relevant key figures

population - 22.000 inhabitants /  
employment rate 11% / coast line - 235 km /  
length of underground tunnels - 200 km /  
underground levels - 20 / maximum depth  
of the mine - 342 m

## Used materials

This is an urban project and materials for new constructions are not predefined. Works on the underground consist mainly of digging and reinforcing stone structure with concrete and steels anchors

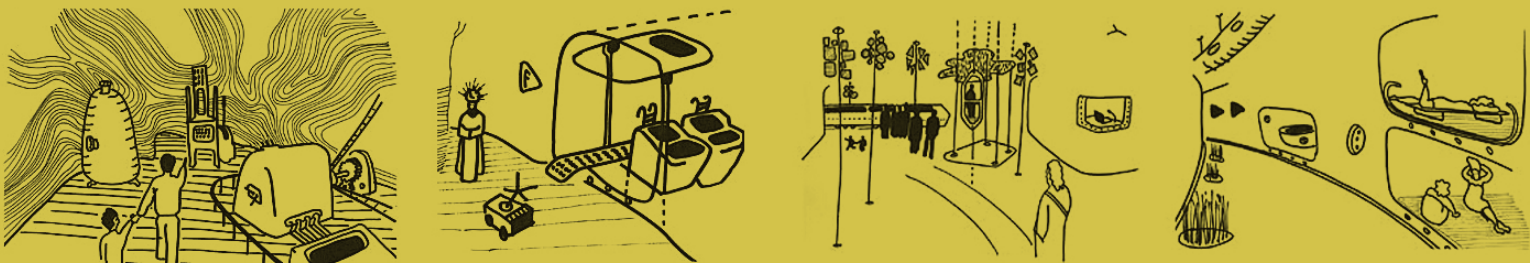
## Project description

Coal-mining in Labin area started 600 years ago. In 19. and 20. century the production of coal became so dominant that it re-invented historical towns and built some of the finest examples of modern industrial urbanism. The underground face of this futurist landscape was as complex as an ant-farm maze of 200 kilometers of underground tunnels with vertical shafts, elevators and completely electrified rail infrastructure and machinery. Today, even though mostly abandoned, the postindustrial landscape represents an overwhelming monumentality. Dilapidated, but still functioning, miners housing, machinery for mining and transportation, demolished electrical plants, testify to the genius of modern architects and engineers that completely redesigned local landscape and culture. Unfortunately, political and economic changes in the 90ties left the locals behind. Number of inhabitants actively involved in the economic progress of the city decreased causing unemployment, migration and reduction of professional expertise, decrease of social heterogeneity and expectations. The region is currently moving from industry towards a service economy thus enhancement of tourism seems to be the expected source of capital. However, mono-cultural development implicated by tourism, when not carefully thought, often brings potential handicaps in achieving healthy and relational improvements for local communities.

The project concept is based upon four main premises: 1) industrial architecture, its strong cultural identity and symbolic capital can serve as basis for cultural growth and cultural tourism 2) heritage should also be used as new production sites: history of mining and patrimony of industrial production can support growth of new technology and production activities 3) there is a potential in natural and ambient qualities of underground for agriculture, production of heat and thermal energy 4) industrial heritage and related cultural patrimony should be seen as common resource. Execution of the plan should count on renewal of culture of self management of common pool resources that nominally existed during socialism Although Underground City XXI is not a real city, because of its complex layered structure, hybrid functions, infrastructural connections and points on ground surface where it connects to industrial sites, villages and urbanized areas, it should be considered as a special kind of urban megaform.

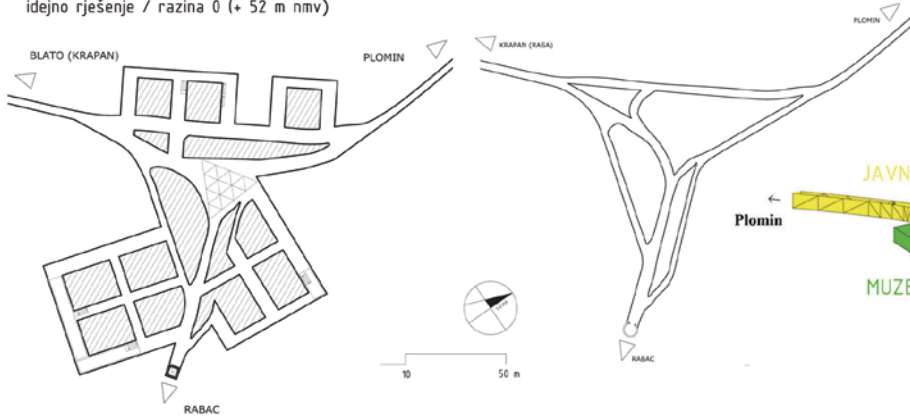
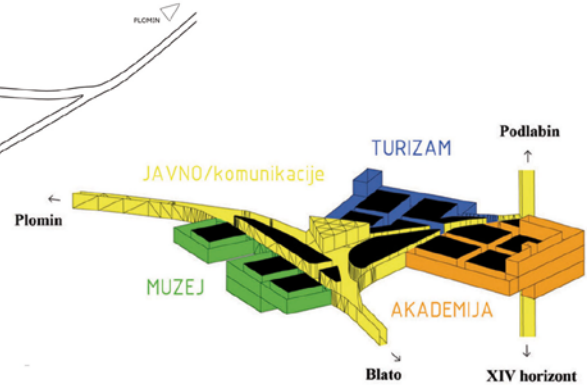
The format of the plan resembles urban and architectural blueprints but in essence it is different because it is left open defining only points and lines of intervention.

note: any prize money received would be transferred to "Platforma 9,81 - Institute for Research in Architecture"



**Tlocti ranžirnog čvora Podlabin – prijedlog**

idejno rješenje / razina 0 (+ 52 m nmv)

**Tlocti ranžirnog čvora Podlabin – postojeće stanje****Measuring up to the target issues for sustainable construction****Innovation and transferability - Progress**

☆☆☆☆

- (re)opens field of underground architectural typologies and new types of landscape modulations
- innovative and informal technology of urban planning: urbanism is a form of both organizational and architectural strategy, cross disciplinary technique, urbanism that proposes operative mechanisms for execution, urbanism that includes stakeholders as authors
- requalification and reprogramming of mining infrastructure for new agricultural, industrial and energy production

**Ethical standards and social equity - People**

☆☆☆☆☆

1) socially viable environments:

Enhancing Number of inhabitants actively involved in the economic progress of the city / Preventing handicaps of mono-cultural development implicated by tourism

2) innovative social ecology in society suffering from distrust in institutions :

Industrial heritage and related cultural patrimony seen as common resource / Examining models of participatory democracy, collective action, cooperation and intersectoral partnerships / continuous public hearings and debates organized and surveys conducted to involve all stakeholders in conceptual phase of design / every phase of design was/is published locally / enabling continuous feedback from all parties involved

3) framework for novelty based on identity:

following historical prerequisites of coal mining / highly appreciating architectural, industrial and cultural heritage / rebuilding communitarianism, solidarity through legacy of self management, political transparency and correctness.

**Environmental quality and resource efficiency - Planet**

☆☆☆☆

concept of preservation, reuse and recycling is the basic approach :

- supporting ecosystems (recycling bio-waste, producing bio-fuels and thermal energy, replenishing groundwater from mining tunnels and pits, efficient heating systems)
- efficient transportation networks, inter-modal traffic solutions and power by electrical energy
- building as landscape modulations keep the land use efficiency
- high ratio of renewable energy to fossil energy in operation and maintenance as urban rule

**Economic performance and compatibility - Prosperity**

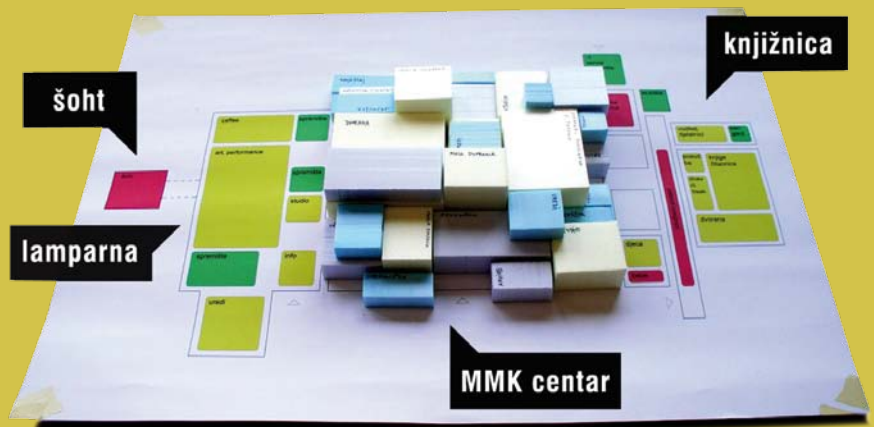
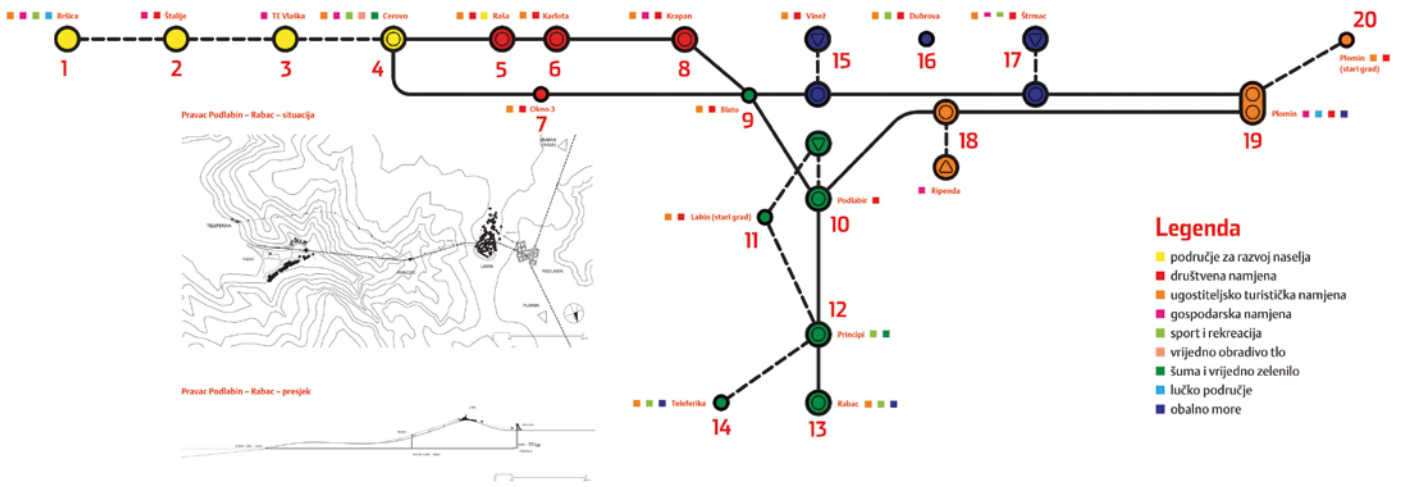
☆☆☆

- proposing operative public-civil-private (PCP) partnerships and mechanisms (legal bodies and agencies) and system tools for organization of stakeholders, civic participation, negotiating interests and coordinating development
- regional impact through benchmarking excellence in energy production, highest values of environmental and cultural heritage and exemplary social and economic model
- multiplying and sharing of responsibilities
- growth of number of inhabitants actively involved in economy

**Contextual and aesthetic impact - Proficiency**

☆☆☆☆☆

- industrial architecture heritage as lightmotive for new design approach
- building by recycling and reprogramming existing infrastructure by introducing new functions and responding to local needs
- upgrade of urban standards and creating employment for residents of poor areas
- new approach to restoration of existing environment by critical evaluation
- keeping natural and ambient qualities of surface and underground using landscape modulations (architecture as landscape)
- inventing new urban typologies: complex layered structures, hybrid functions, diverse infrastructural connections with points on ground surface
- introducing new kind of synthetic creative practice in which landscape, ecology and technology, socially conscious policies, architecture and planning interact in open field



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11 / 2011



Tiskano na papiru  
certificiranom od strane  
Forest Stewardship  
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